Acer AL1916p

Service Guide

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Conventions

The following conventions are used in this manual:

Screen messages	Denotes actual messages that appear on screen
Note	Gives bits and pieces of additional information related to the current topic.
Warning	Alerts you to any damage that might result from doing or not doing specific actions.
Caution	Gives precautionary measures to avoid possible hardware or software problems.
Important	Reminds you to do specific actions relevant to the accomplishment of procedures.

Preface

Before using this information and the product it supports, please read the following general information.

1. this Service Guide provides you with all technical information relating to the BASICCONFIGURATION decided for Acer's "global" product offering. To better fit local market requirements and enhance product competitiveness, your regional office MAY have decided to extend the functionality of a machine (e.g. add-on card, modem, or extra memory capability). These LOCALIZED FEATURES will NOT be covered in this generic service guide. In such cases, please contact your regional offices or the responsible personnel/channel to provide you with further technical details.

2. please not WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. If, for whatever reason, a part number change is made, it will not be noted in the printed Service Guide, for ACER-AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the list provided by your regional Acer office to order FRU parts for repair and Service of customer machines.

WARNING: (FOR FCC CERTIFIED MODELS)

NOTE: this equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception,
Which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

Warning

Use only shielded signal cables to connect I/O devices to this equipment. You are cautioned that changes or modifications not expressly approved by the party responsible for comliance could viold your authority to operate the equipment.

As an ENERGY STAR® Partner our company has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

WARNING:

To prevent fire or chock hazard, do not expose the monitor to rain or moisture. Dangerously high voltages are present inside the monitor. Do not open the cabinet. Refer servicing to qualified personnel only.

PRECAUTIONS

- Do not use the monitor near water, e.g. near a bathtub, washbowl, kitchen sink, laundry tub, Swimming pool or in a wet basement.
- Do not place the monitor on an unstable trolley, stand, or table. If the monitor falls, it can injure a person and cause serious damage to the appliance. Use only a trolley or stand recommended by the manufacture or sold with the monitor. If you mount the monitor on a wall or shelf, use a mounting kit approved by the manufacture and follow the kit instructions.
- Slots and openings in the back and bottom of the cabinet area provided for ventilation. To ensure reliable operation of the monitor and to protect it from overheating, be sure these openings are not blocked or covered. Do not place the monitor on a bed, sofa, rug or similar surface. Do not place the monitor near or over a radiator or heat register. Do not place the monitor in a bookcase or cabinet unless proper ventilation is provided.
- The monitor should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.
- The monitor is equipped with a three-pronged grounded plug, a plug with a third (grounding) pin. This plug will fit only into a grounded power outlet as a safety feature. If your outlet does not accommodate the three-wire plug, have an electrician install the correct outlet, or use an adapter to ground the appliance safely. Do not defeat the safety purpose of the grounded plug.
- Unplug the unit during a lightning storm or when it will not be used for long periods of time. This will protect the monitor from damage due to power surges.
- Do not overload power strips and extension cords. Overloading can result in fire or electric shock.
- Never push any object into the slot on the monitor cabinet. It could short circuit parts causing a fire or electric shock. Never spill liquids on the monitor.
- Do not attempt to service the monitor yourself; opening or removing covers can expose you to dangerous voltages and other hazards. Please refer all servicing to qualified service personnel.
- To ensure satisfactory operation, use the monitor only with UL listed computers which have appropriate configured receptacles marked between 100-240V AC, Min. 3.5A.
- The wall socket shall be installed near the equipment and shall be easily accessible.

SPECIAL NOTES ON LCD MONITORS

The following symptoms are normal with LCD monitor and do not indicate a problem.

NOTES

- Due to the nature of the fluorescent light, the screen may flicker during initial use. Turn off the Power Switch and then turn it on again to make sure the flicker disappears.
- You may find slightly uneven brightness in the screen depending on the desktop pattern you use.
- The LCD screen has effective pixels of 99.99% or more. It may include blemishes of 0.01% or less such as a missing pixel or a pixel lit all of the time.
- Due to the nature of the LCD screen, an afterimage of the previous screen may remain after switching the image, when the same image is displayed for hours. In this case, the screen is recovered slowly by changing the image or turning off the Power Switch for hours.

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Chapter 1

Monitor Feature

INTRODUCTION

Scope

This specification defines the requirements for the 19" MICRO-PROCESSOR based Multi-mode supported high resolution color LCD monitor. This monitor can be directly connected to general 15 pin D-sub VGA connector and eliminates the requirement of optional special display card. It also supports VESA DPMS power management and plug & play function. There is a build-in stereo audio amplifier with volume control to drive a pair of speakers.

Description

The LCD monitor is designed with the latest LCD technology to provide a performance oriented product with no radiation. This will alleviate the growing health concerns. It is also a space saving design, allowing more desktop space, and comparing to the traditional CRT monitor, it consumes less power and gets less weight in addition MTBF target is 20k hours or more.

Comparison Chart of AL1916

	AA698T	AA698A
Panel	Normal 19" panel AU-M190EN04(V5)	Normal 19" panel Samsung-LTM190EX-L01
Signal Interface	DSUB	DSUB
Sync Type for analog input	Separate / compatible /	Separate / compatible /
Color Temp user adjust	Support	Support
DDC	DDC2B	DDC2B
Speaker	NO	NO
Headphone Jack	NO	NO
Microphone Jack	No	No
USB Hub	Not support	Not support
Tilt / Swivel	Yes / No	Yes / No
Height Adjust	Option	Option

ELECTRICAL REQUIREMENTS

Standard Test Conditions

All tests shall be performed under the following conditions, unless otherwise specified.

Ambient light :	225 lux
Viewing distance :	50 cm in front of LCD panel
Warrn up time	
All specifications :	30 minutes
Fully functional :	5 seconds
Measuring Equipment :	Chroma 2250 signal generator or equivalent, directly Connected to the monitor under test. Minolta CA100 photometer, or equivalent
Control settings	
User brightness control :	Maximum (unless otherwise specified)
User contrast control:	Typical (unless otherwise specified)
User red/white balance, Green/white balance and Blue/white balance control :	In the center (unless otherwise specified)
Power input:	110Vac or 230Vac
Ambient temperature:	20 ± 5 ˚C (68 ± 9 ˚ F)
Analog input mode:	1280 x1024 /60 Hz

MEASUREMENT SYSTEMS

The units of measure stated in this document are listed below:

1 gamma = 1 nano tesla
1 tesla = 10,000 gauss
cm = in x 2.54
lb = kg x 2.2
degrees F = [°C x 1.8] + 32
degrees C = [°F - 32]/1.8
u' = 4x/(-2x + 12y + 3)
v' = 9y/(-2x + 12y + 3)
x = (27u'/4)/[(9u'/2) - 12v' + 9]
y = (3v')/[(9u'/2) - 12v' + 9]
nits = cd/(m^2) = Ft-L x 3.426
lux = foot-candle x 10.76

LCD monitor General specification

Panel Type:	19 " active matrix color TFT LCD 1). LG LM190E03-B4 2). LG LM190E03-B4N9 3). Samsung LTM190EX-L01 4). AU M190EN04 V5
Display size:	376.32mm (H) × 301.056mm(V)
Display mode:	VGA 720 × 400 (70 Hz) VGA 640 × 480 (60/66/70/72/75 Hz) SVGA 800 × 600 (60/70/72/75 Hz) XGA 1024 × 768 (60/70/75 Hz) SXGA 1280 × 1024 (60/70/75 Hz) standard resolution
Pixel pitch:	0.294mm(H) × 0.294mm(V)

Display Dot:	1280 x (RGB) × 1024	
Pixel Clock:	25.2 – 135.0MHz	
Contrast ratio: $\theta = 0^\circ$	LG: 500:1 (typical) Samsung: 700:1 (typical) AU: 550:1 (typical)	
Brightness:	LG: 250 (typical) Samsung: 300 (typical) AU: 270 (typical)	
Response time (Tr/Tf):	LG	Ta=25°C, 2/10ms (typical)
	Samsung	Ta=25°C, 1.7/6.3ms (typical)
	AU	Ta=25°C, 5.6/2.4ms (typical)
Display color:	LG	16.2M color with FRC
	Samsung	16.7M
	AU	16.2M color with FRC
Viewing angle(CR>10):	LG	L / R ≧ 70 / ≧ 70
		U / D ≧ 70 / ≧ 70
	Samsung	L / R ≧ 75 / ≧ 75
		U / D ≧ 75 / ≧ 60
	AU	L / R ≧ 70 / ≧ 70
		U / D ≧ 75 / ≧ 60
Luminance Uniformity:	LG	< 1.3 (max)
	Samsung	< 25 % (max)
	AU	>70% (min)

LCD Panel Specification

LCD Panel Model (AU-M190EN04(V5))

- Display Type — active matrix color TFT LCD
- Resolution — 1280 x 1024 pixels
- Display Dot — 1280 x (RGB) x 1024
- Display Area — 376.32mm(H) x 301.06mm(V)
- Pixel Pitch — 0.098x3mm(H) x 0.294mm(V)
- Display Color — 16777216
- Lamp Voltage — 700 Vrms typ.
- Lamp Current — 7mA rms.(typ). 4 Lamp
- Weight — 2700g .
- Optical Specifications

  The following items are measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state with the methods shown in Note(4).

  ◆Measuring equipment : TOPCON BM-5A, BM-7, PHOTO RESEARCH PR650

(Inverter Freq. : 54kHz) *Ta =25 ± 2°C, VDD=5V, fv=60 Hz, fDCLK=54 MHz, IL= 7mArms

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio (Center of screen)		CR	Normal $\phi = 0^\circ$ $\theta = 0^\circ$ Viewing Angle	350	550	-		(1)(2)(4) BM-5A
Response Time	Rising	T_R		-	5.6	8.4	msec	(1)(3) BM-7
	Falling	T_F		-	2.4	3.6		
Luminance of White (Center of screen)		Y_L		215	270	-	cd/m2	(5) BM-5A
Color Chromaticity (CIE 1931)	Red	Rx		TYP. -0.03	0.634	TYP. +0.03		(1)(4) PR650
		Ry			0.354			
	Green	Gx			0.287			
		Gy			0.621			
	Blue	Bx			0.138			
		By			0.077			
	White	Wx			0.313			
		Wy			0.329			
Viewing Angle	Hor.	θ_L	CR≥10	65	70	-	Degrees	(1)(4) BM-5A
		θ_R		65	70-	-		
	Ver.	ϕ_H		65	70-	-		
		ϕ_L		55	60-	-		
Brightness Uniformity (9 points)		B_{UNI}		70	75-	-	%	(6) BM-5A

LCD Panel Model (Samsung-LTM190EX-L01)

- Display Type — active matrix color TFT LCD
- Resolution — 1280 x 1024 pixels
- Display Dot — 1280 x (RGB) x 1024
- Display Area — 376.32mm(H) x 301.056mm(V)
- Pixel Pitch — 0.098x3mm(H) x 0.294mm(V)
- Display Color — 16777216

- Lamp Voltage 650 Vrms typ.
- Lamp Current 7.5mA rms.(typ). 4 Lamp
- Weight 2250g .
- Optical Specifications

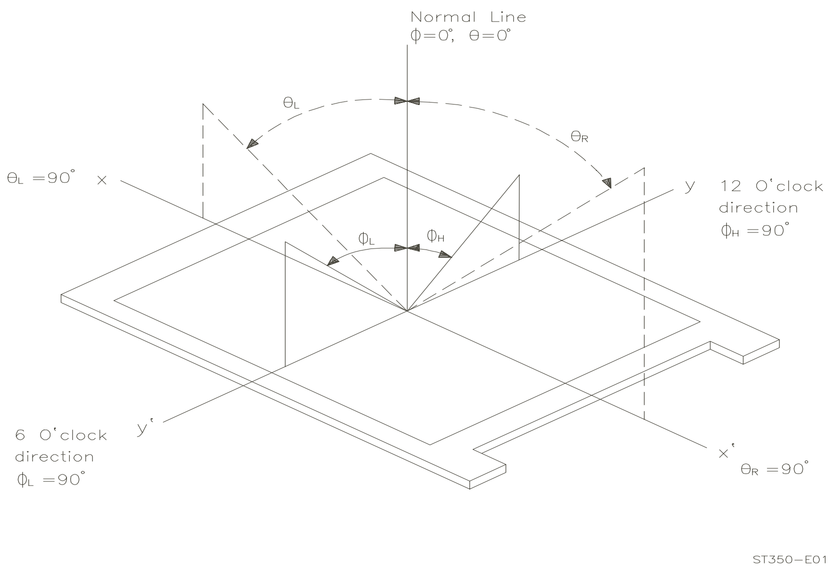
  The following items are measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state with the methods shown in Note(4).

  ◆Measuring equipment : TOPCON BM-5A, BM-7, PHOTO RESEARCH PR650

(Inverter Freq. : 54kHz) *Ta =25 ± 2°C, VDD=5V, fv=60 Hz, fDCLK=54 MHz, IL= 7mArms

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio (Center of screen)		CR	Normal $\phi = 0^\circ$ $\theta = 0^\circ$ Viewing Angle	450	700	-		(1)(2)(4) BM-5A
Response Time	Rising	T_R		-	1.7	3	msec	(1)(3) BM-7
	Falling	T_F		-	6.3	9		
Luminance of White (Center of screen)		Y_L		250	300	-	cd/m2	(5) BM-5A
Color Chromaticity (CIE 1931)	Red	Rx		TYP. -0.03	0.640	TYP. +0.03		(1)(4) PR650
		Ry			0.329			
	Green	Gx			0.300			
		Gy			0.600			
	Blue	Bx			0.150			
		By			0.060			
	White	Wx			0.313			
		Wy			0.329			
Viewing Angle	Hor.	θ_L	CR≥10	65	75	-	Degrees	(1)(4) BM-5A
		θ_R		65	75	-		
	Ver.	ϕ_H		65	75-	-		
		ϕ_L		50	60-	-		
Brightness Uniformity (9 points)		B_{UNI}				25	%	(6) BM-5A

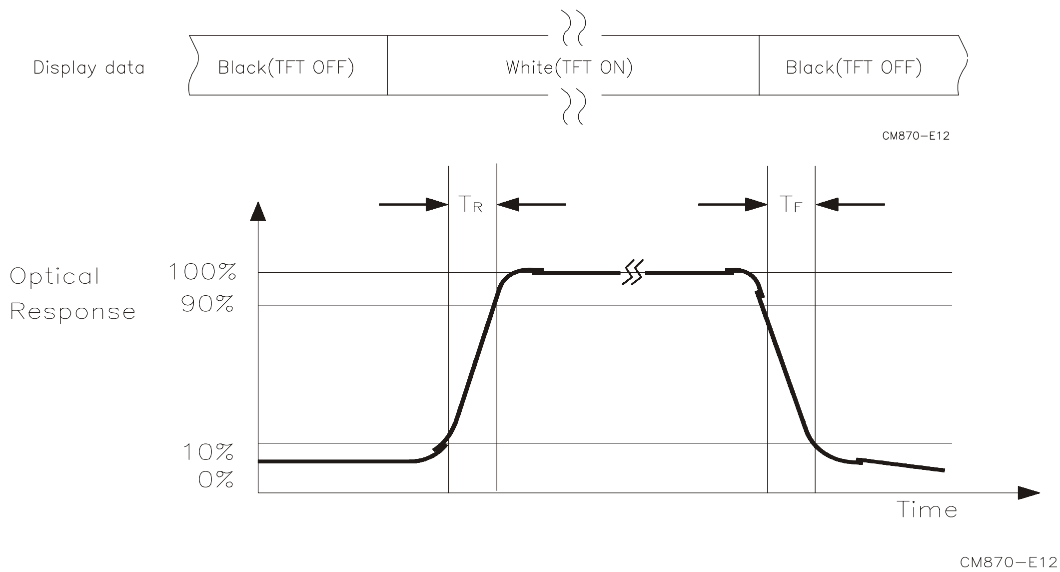
Note 1) Definition of Viewing Angle: Viewing angle range (10≤CR)



Note 2) Definition of Contrast Ratio (CR): Ratio of gray max(Gmax),gray min(Gmin) at the center point of panel.

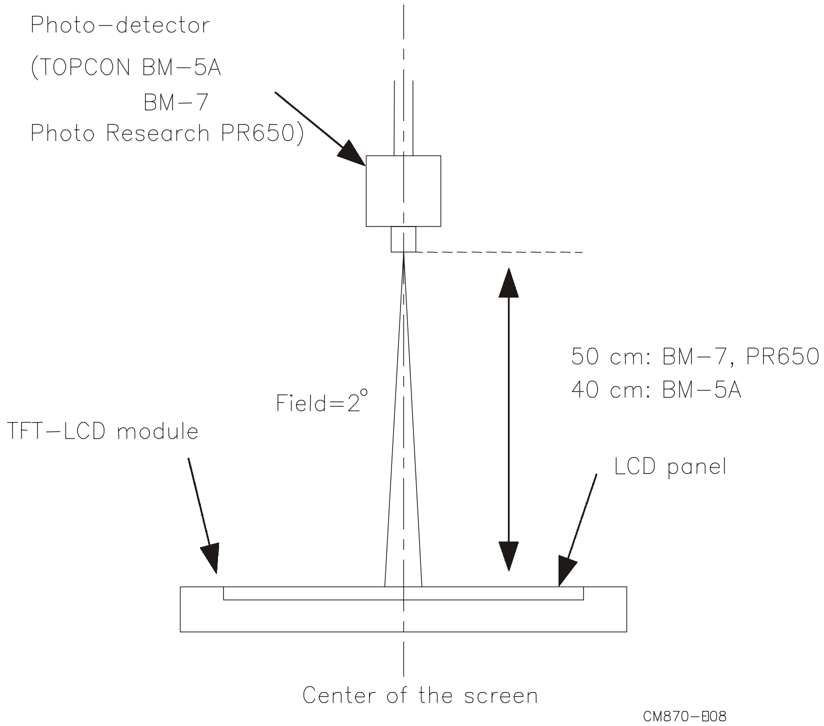
$$CR = \frac{\text{Luminance with all pixels white (Gmax)}}{\text{Luminance with all pixels black (Gmin)}}$$

Note 3) Definition of Response time: Sum of T_R , T_F



Note 4) After stabilizing and leaving the panel alone at a given temperature for 30 min, the measurement should be executed .Measurement should be executed n a stable, windless ,and dark room.30 min after lighting the back-light. This should be measured in the center of screen. Dual lamp current :13.0mA(6.5mA x2)(Refer to the note(1) in the page 14 for more information).

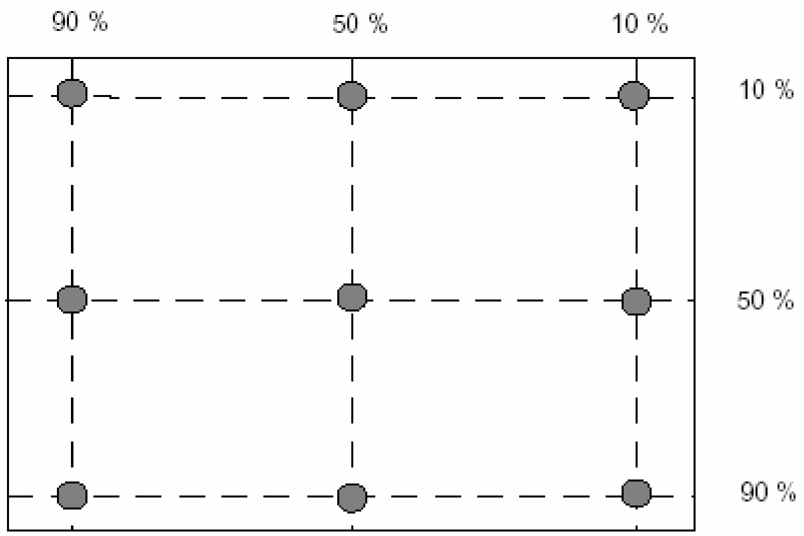
Environment condition :Ta=25±2°C



Optical characteristics measurement setup

Notes 5) Definition of Luminance of White : measure the luminance of white at center point.

Brightness uniformity of these 9 points is defined as below



Notes 6)Definition of 9 points brightness uniformity (Measuring points: Refer to the Note 5)

AU

$$B_{UNI} = \frac{Bmin}{Bmax} \times 100\%$$

Samsumg

$$B_{UNI} = \frac{Bmax-Bmin}{Bmax} \times 100\%$$

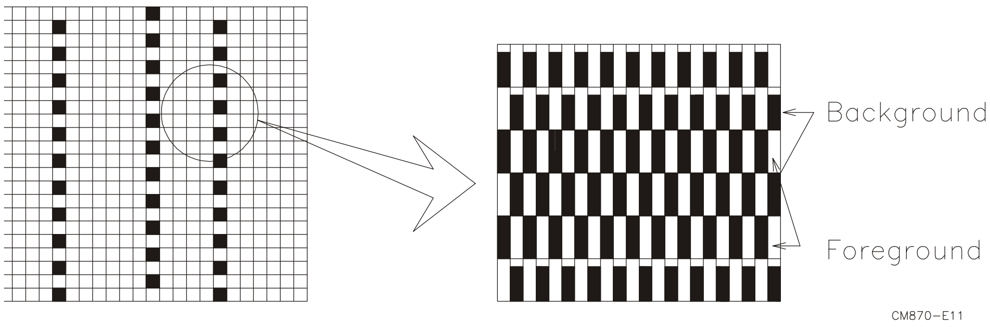
Bmax: Maximum brightness
Bmin: Minimum brightness

Notes 7) Definition of Flicker level

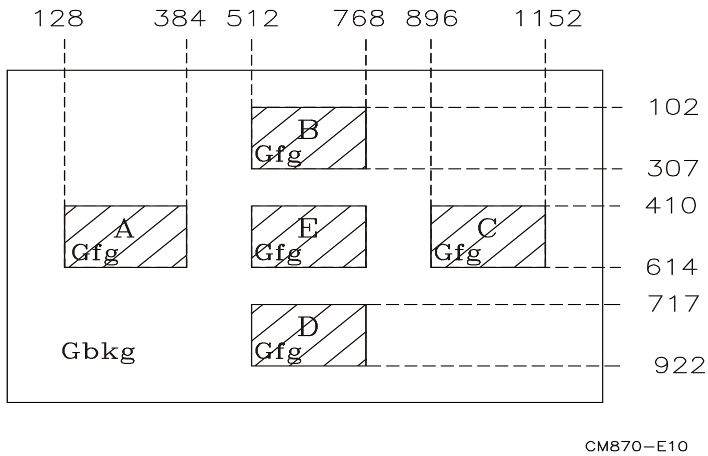
$$F = \frac{\text{Flicker Voltage}_{pp}}{\text{LMD Voltage}_{dc}} \times 100\ \%$$

- One maximum value of three estimated values.
- For this test ,an LMD(Light Measurement Device)is needed with adequate response time to track any visible rate flicker component and with a voltage level output proportional To luminance intensity.
- Test Pattern: For dot inversion Driving(Gray levels of foreground dots on the test panel Are G22,G32,and G45)

♦ Test Point :Center point of the display area



Note 8) Definition of Crosstalk (Refer to the VESA STD)



The calculation for shadowing is made from the 2 luminance measurements Gbkg and Lsh, as follows:

$$C_T = \frac{L_{max} - L_{min}}{L_{min}} \times 100\ \%$$

Where Lmax is the larger value of Gbkg or Lsh , and Lmin is the smaller of the two.

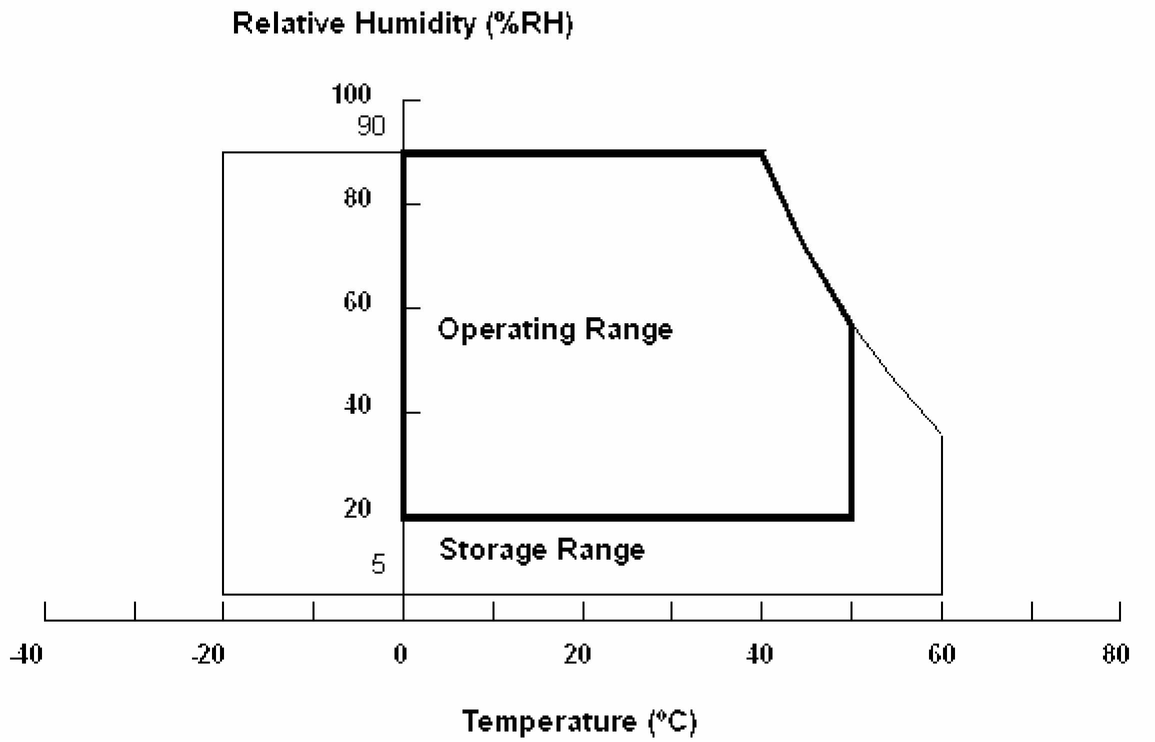
♦ To determine background and foreground levels (colors),first set the background to any gray scale or color level suitable for shadowing determination.(Note that it may take several iterations of adjusting background level and box levels to determine the proper value for the background .Next display the box levels to determine the proper value for the background level. Look for shadowing in any direction from box E. Independently vary the gray level (or color) of the background and box E until the worst case shadowing is observed. This defines the background (Gbkg) and foreground (Gfg) levels to be maintained for the remainder of the test.

♦ One point only (the target) will be measured. To determine that point proceed as follows Using the background and foreground gray levels of step1 (Gbkg and Gfg). Turn on each box at a time. Look for the case with the worst shadowing. The box causing the worst case is the shadowing source, or Bsrc. Use Bsrc and the box opposite from it that lies directly in the shadow path. That is the target box, or Btgt. Note that box Eight be either Bsrc or Btgt, depending on the shadowing conditions, but typically Bsrc and Btgt will be a pair of

opposite boxes, A&C or B&D. Btgt will only be displayed for aligning the LMD. It will be turned off for the actual measurement.

♦ The target box point (Btgt) will be measured with the source box (Bsrc) turned on then off. (Btgt is for alignment purpose only) Display the background only at level Gbkg. Display Btgt determined in step 2 above. Using the correct distance, angle, and measurement aperture, align the LMD to the center of the Btgt. Turn off Btgt. With Gbkg set to its proper level, measure the luminance (or color). Next,turn on the source box Bsrc. Again measure at the center point of Btgt (without Btgt present.). In this case the LMD will be measuring the shadowing level, Lsh.

Panel Relative Humidity



JP777-E02

Input Signals

Video input

- Type — Analog R, G, B.
- Input Impedance — 75 ohm +/- 2%
- Polarity — Positive
- Amplitude — 0 - 0.7 +/- 0.05 Vp
- Display Color — same as LCD panel

Sync input

- Signal — separate horizontal and vertical sync, or composite sync which are TTL compatible
- Polarity — positive and negative.

Interface frequency

The following frequency range is generalized by supported timing. If the entered mode does not match the supported timing the display optimization will not be assured.

- Horizontal Frequency 24KHz --80KHz
- Vertical Frequency 49Hz -------75Hz

Supported Timing

TIMING	FH(KHZ) FV(HZ)	SYNC POLARITY	TOTAL (DOT/LINE)	ACTIVE (DOT/LINE)	SYNC WIDTH (DOT/LINE)	FRONT PORCH (DOT/LINE)	BACK PORCH (DOT/LINE)	PIXEL FOREQ.(MHZ)
640x350	31.469	+	800	640	96	16	48	25.175
VGA-350	70.087	–	449	350	2	37	60	
640x400	24.83	–	848	640	64	64	80	21.05
NEC PC9801	56.42	–	440	400	8	7	25	
640x400	31.469	–	800	640	96	16	48	25.175
VGA-GRAPH	70.087	+	449	400	2	12	35	
640x400	31.5	–	800	640	64	16	80	25.197
NEC PC9821	70.15	–	449	400	2	13	34	
640X480	31.469	-	800	640	96	16	48	25.175
VESA-PAL	50.030	-	629	480	2	62	85	
640x480	31.469	–	800	640	96	16	48	25.175
VGA-480	59.94	–	525	480	2	10	33	
640x480	35.00	–	864	640	64	64	96	30.24
APPLE MAC-480	66.67	–	525	480	3	3	39	
640x480	37.861	–	832	640	40	16	120	31.5
VESA-480-72Hz	72.809	–	520	480	3	1	20	
640x480	37.5	–	840	640	64	16	120	31.5
VESA-480-75Hz	75	–	500	480	3	1	16	
720x400	31.469	–	900	720	108	18	54	28.322
VGA-400-TEXT	70.087	+	449	400	2	12	35	
832x624	49.725	–	1152	832	64	32	224	57.2832
APPLE MAC-800	74.55	–	667	624	3	1	39	
800x600	35.156	+	1024	800	72	24	128	36
SVGA	56.25	+	625	600	2	1	22	
800x600	37.879	+	1056	800	128	40	88	40
VESA-600-60Hz	60.317	+	628	600	4	1	23	
800x600	48.077	+	1040	800	120	56	64	50
VESA-600-72Hz	72.188	+	666	600	6	37	23	
800x600	46.875	+	1056	800	80	16	160	49.5
VESA-600-75Hz	75	+	625	600	3	1	21	
1024x768	48.363	–	1344	1024	136	24	160	65
XGA	60.004	–	806	768	6	3	29	
1024x768	53.964	+	1328	1024	176	16	112	71.664
COMPAQ-XGA	66.132	+	816	768	4	8	36	
1024x768	56.476	–	1328	1024	136	24	144	75
VESA-768-70Hz	70.069	–	806	768	6	3	29	
1024x768	60.023	+	1312	1024	96	16	176	78.75
VESA-768-75Hz	75.029	+	800	768	3	1	28	
1024x768	60.24	–	1328	1024	96	32	176	80
APPLE MAC-768	75.02	–	803	768	3	3	29	
1152x864	54.054	+	1480	1152	96	40	192	80
(60Hz)	59.270	+	912	864	3	13	32	
1152x864	63.851	+	1480	1152	96	32	200	94.499
(70Hz)	70.012	+	912	864	3	1	44	
1152x864	67.50	+	1600	1152	128	64	256	108.00
(75Hz)	75.00	+	900	864	2	2	32	
1280x960	60.00	+	1800	1280	112	96	312	108.00
(60Hz)	60.00	+	1000	960	3	1	36	
1280x960	70.00	+	1800	1280	112	96	312	126.00
(70Hz)	70.00	+	1000	960	3	1	36	
1280x960	75.00	+	1800	1280	112	96	312	135.00
(75Hz)	75.00	+	1000	960	3	1	36	
1280x1024	64	+	1688	1280	112	48	248	108
VESA-1024-60Hz	60	+	1066	1024	3	1	38	
1280x1024	80	+	1688	1280	144	16	248	135
VESA-1024-75Hz	75	+	1066	1024	3	1	38	

Note: Mode 640x350, 640x400 and 720x400 will locate on middle position but cannot be expanded to full screen on vertical direction

Support Modes

There will be 28 total support modes to accommodate the above mode and other video modes within the frequency range of the monitor.

85Hz refresh rate Support

Monitor should display 85Hz refresh rate mode as emergency mode.

Monitor should display “Out of Range” warning menu at this mode.

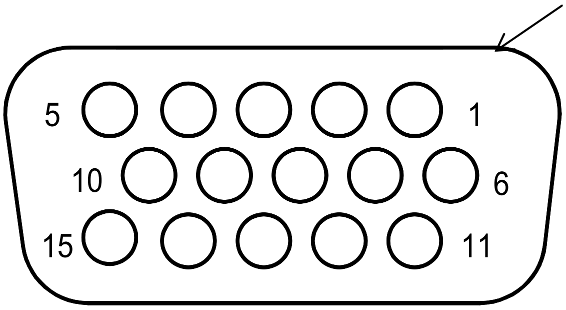
Video input Connector

Analog Video input Connector: 15pins mini D-Sub

Table 2.4.5. Pin assignment for D-sub connector

PIN NO.	**Separate Sync**
1	RED VIDEO
2	GREEN VIDEO
3	BLUE VIDEO
4	GROUND
5	GROUND
6	RED GROUND
7	GREEN GROUND
8	BLUE GROUND
9	PC5V (+5V DDC)
10	CABLE DETECTION
11	GROUND
12	SDA
13	H.SYNC
14	V.SYNC
15	SCL

Color of plastic parts: Blue (PC99)



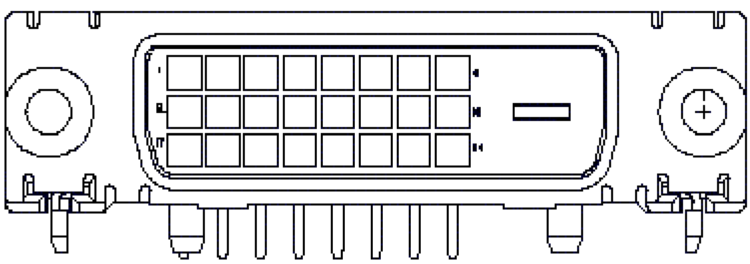
D-sub connector

Digital Video Input Connector : DVI – D   (T.B.D)

Table 2.4.6 Pin assignment for DVI – D Connector:

Pin – Assignment of DVI –D connector :					
1	TX2-	9	TX1-	17	TX0-
2	TX2+	10	TX1+	18	TX0+
3	Shield (TX2 / TX4)	11	Shield (TX1 / TX3)	19	Shield (TX0 / TX5)
4	NC	12	NC	20	NC
5	NC	13	NC	21	NC
6	DDC-Serial Clock	14	+5V power *)	22	Shield (TXC)
7	DDC-Serial Data	15	Ground (+5V)	23	TXC+
8	No Connect	16	Hot plug detect	24	TXC-

*) In case, the power of the PC unit is switched off and the power of the monitor is switched on, no voltage may occur at pin 14.

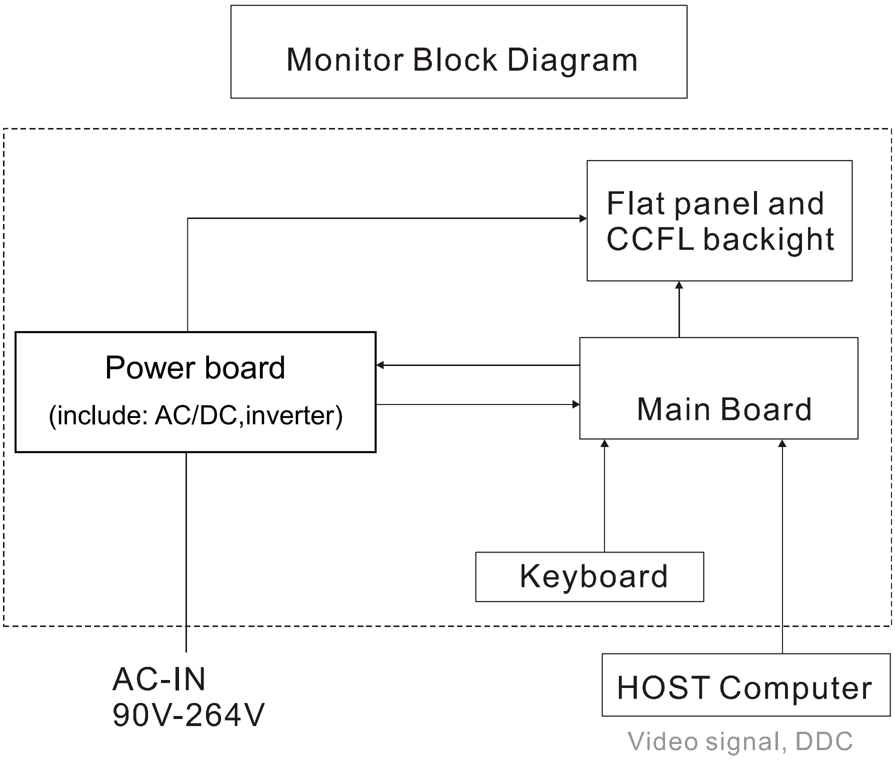


MONITOR BLOCK DIAGRAM

The LCD monitor will contain an main board, an inverter/ power board, key board and internal adapter which house the flat panel control logic, brightness control logic and DDC.

The inverter board will drive the backlight of panel and the DC-DC conversion.

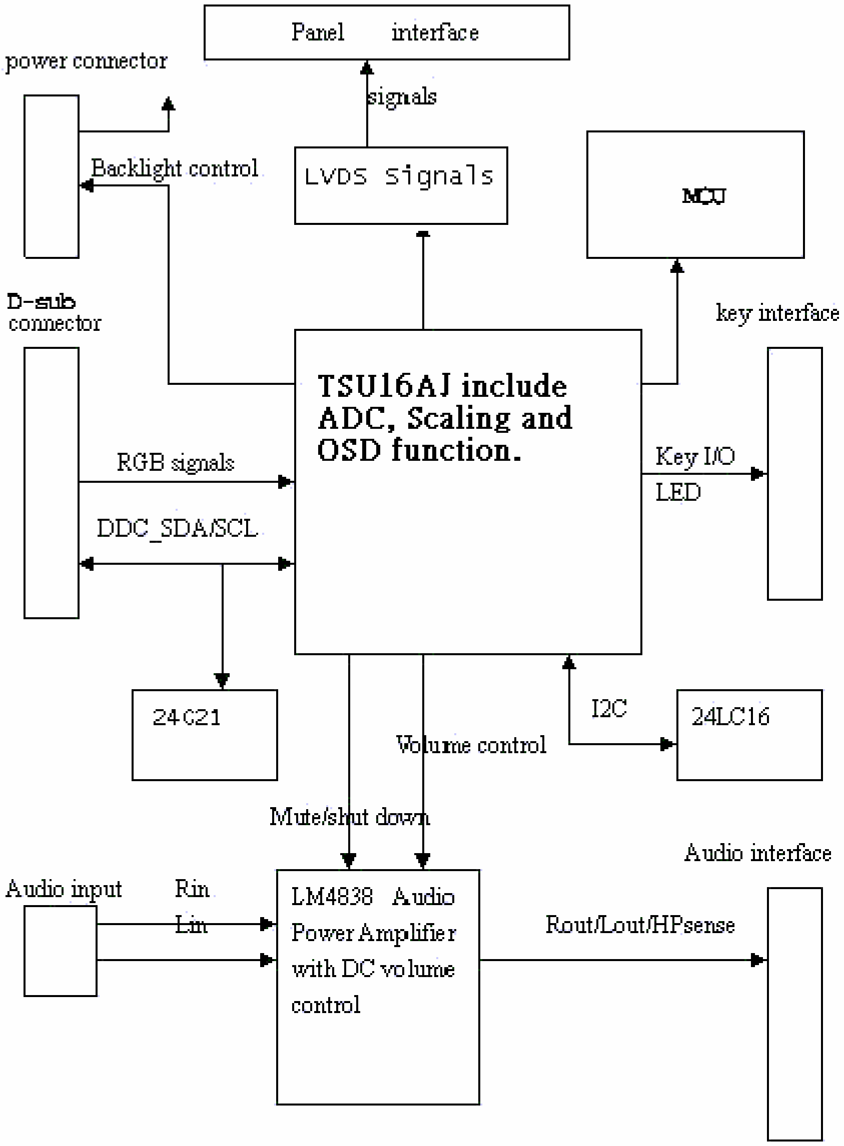
The Adapter will provide thr 12V DC-power to inverter/ power board.



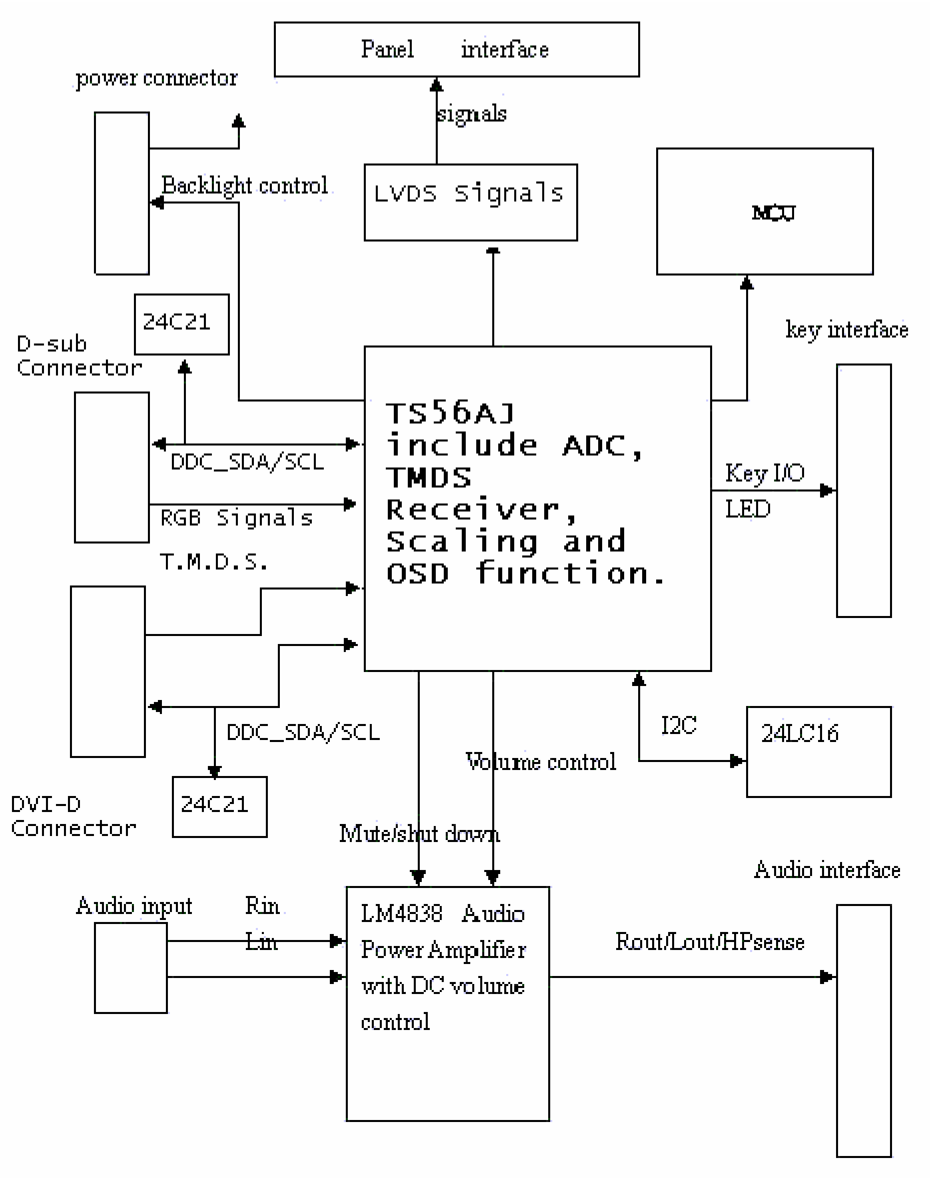
BLOCK DIAGRAM

System Block Diagram

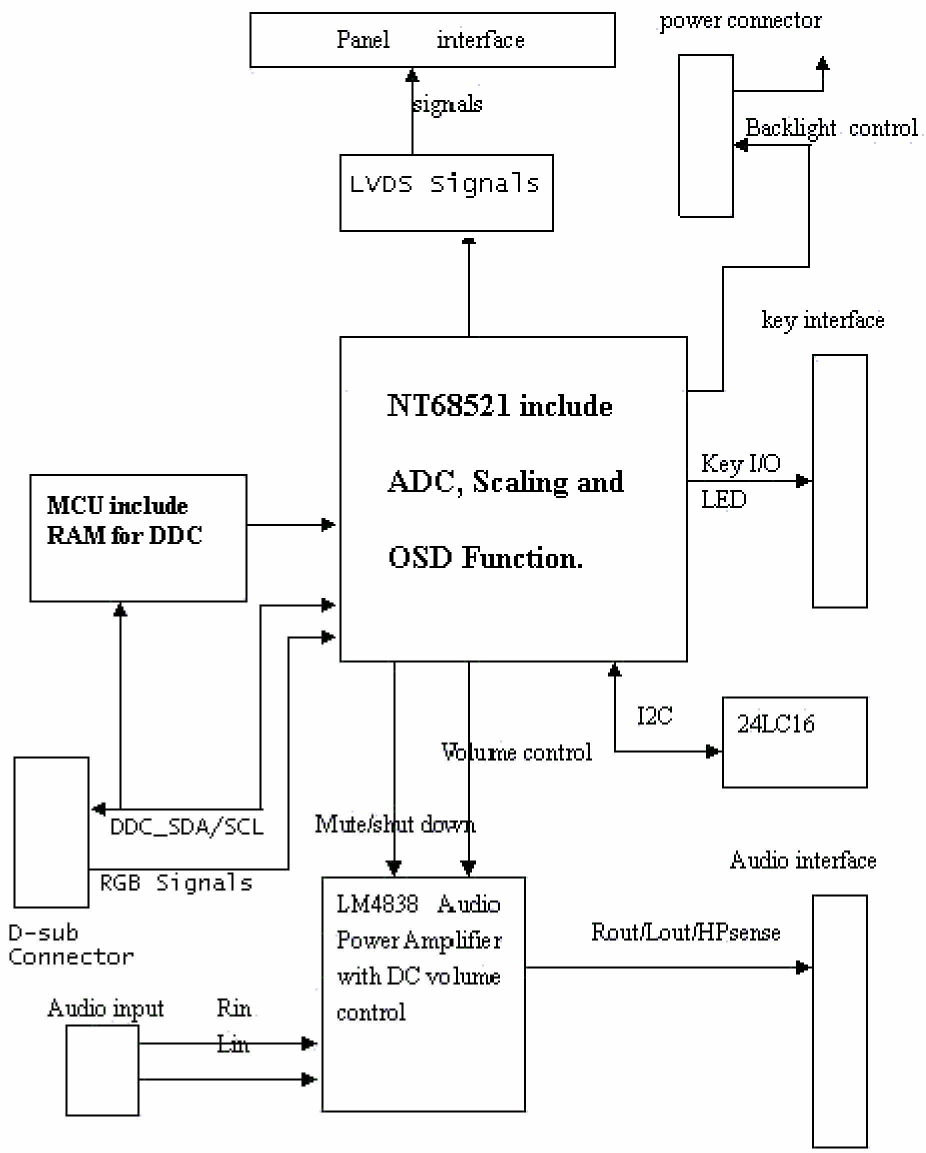
1.



2.


Panel interface
power connector
signals
Backlight control
LVDS Signals
MCU
24C21
D-sub
Connector
key interface
TS56AJ
include ADC,
TMDS
Receiver,
Scaling and
OSD function.
DDC_SDA/SCL
RGB Signals
Key I/O
LED
T.M.D.S.
I2C
24LC16
DDC_SDA/SCL
Volume control
DVI-D
Connector
24C21
Mute/shut down
Audio interface
Audio input
Rin
Lin
LM4838 Audio
Power Amplifier
with DC volume
control
Rout/Lout/HPsense

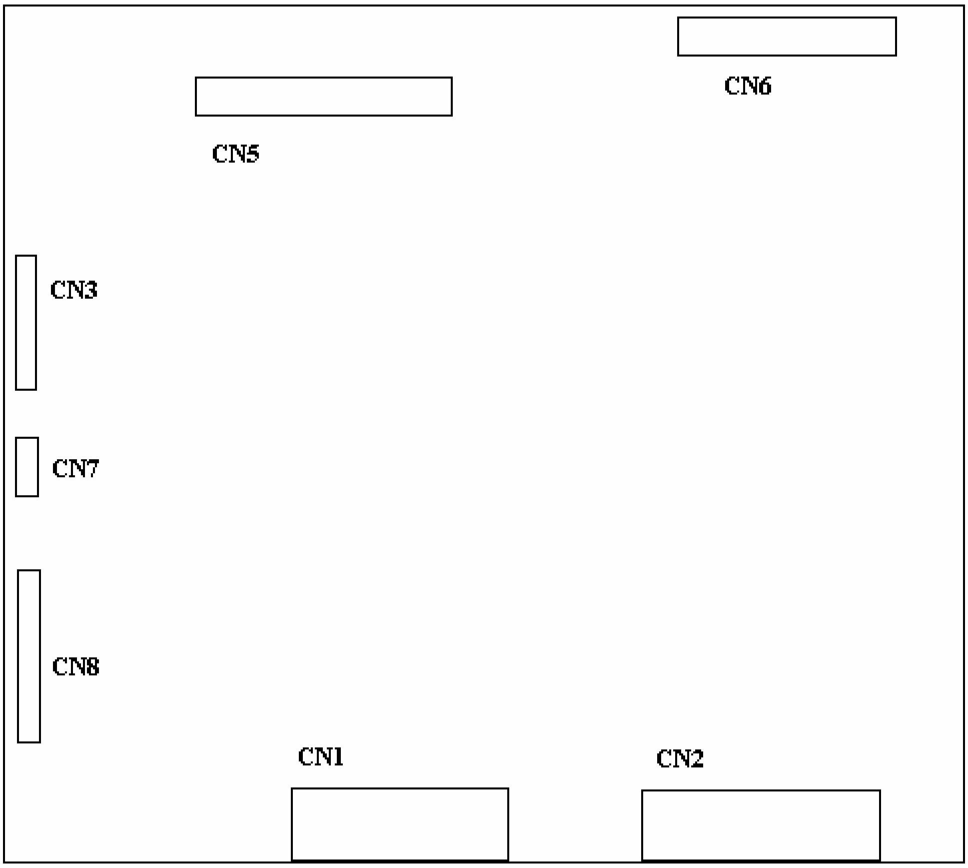
3.



Panel interface
power connector
signals
LVDS Signals
Backlight control
key interface
NT68521 include
ADC, Scaling and
OSD Function.
Key I/O
LED
MCU include
RAM for DDC
I2C
24LC16
Volume control
DDC_SDA/SCL
Mute/shut down
Audio interface
RGB Signals
LM4838 Audio
Power Amplifier
with DC volume
control
Rout/Lout/HPsense
D-sub
Connector
Audio input
Rin
Lin

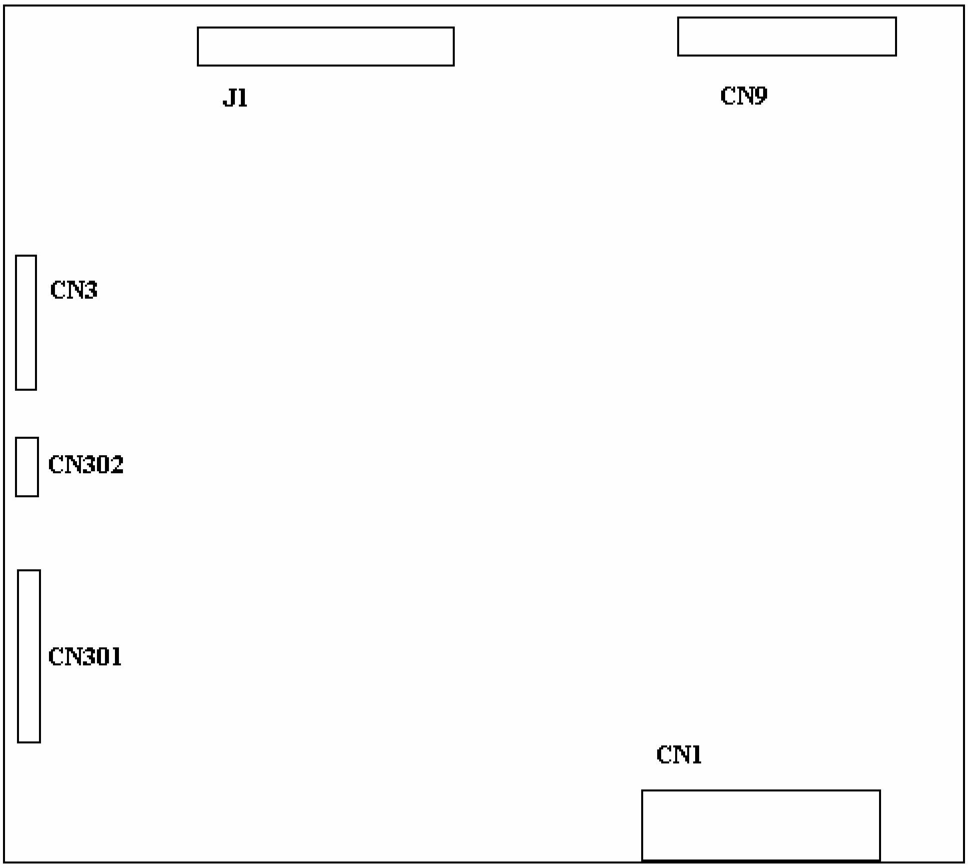
Monitor board layout

1.



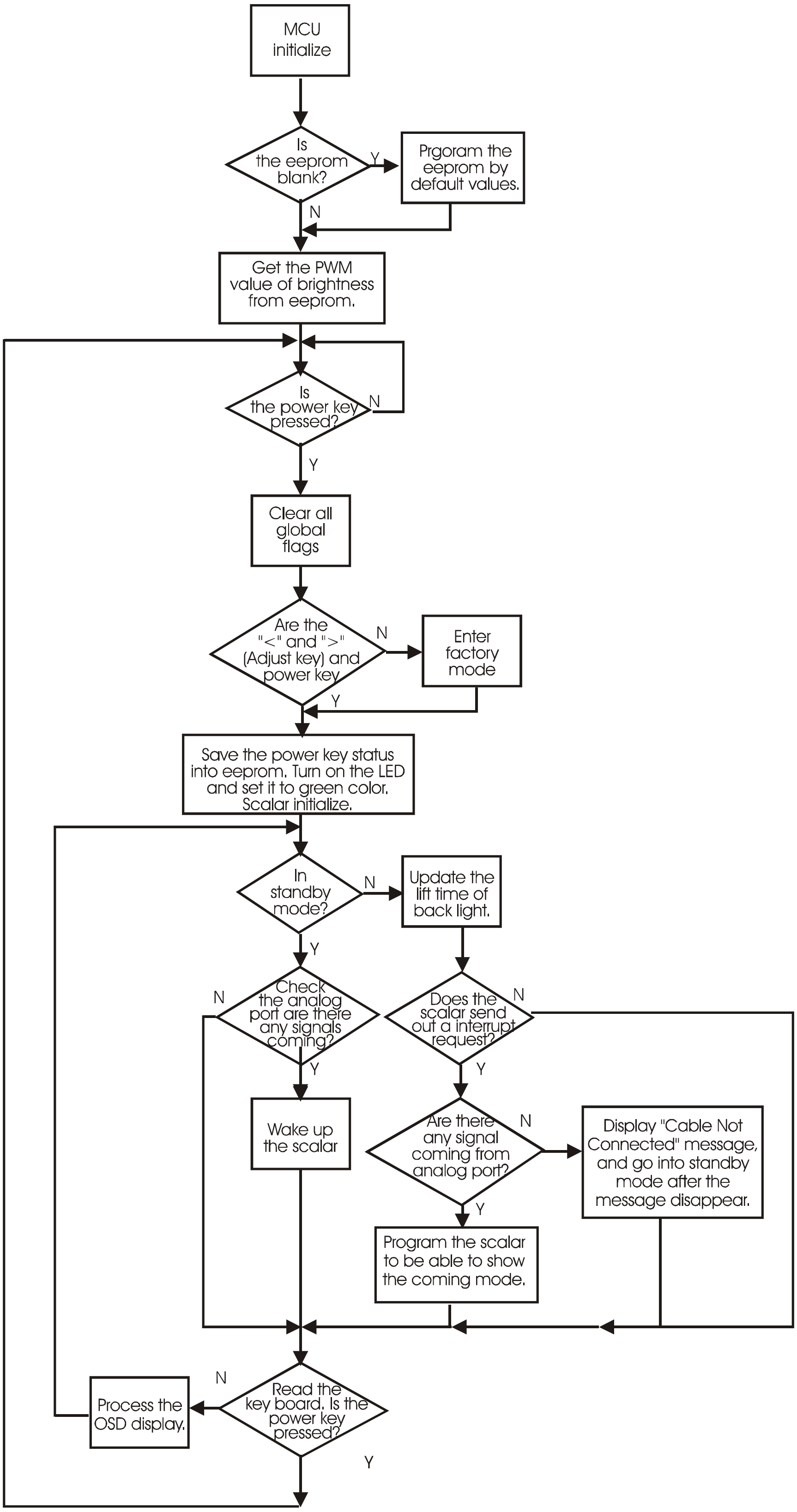
LABEL	Component	LABEL	Component
U1	24LC21A	CN1	D-SVB 15 PIN
U2	24LC21A	CN2	DVI-D 24 PIN
U3	TSU56AJ or TSU16AJ	CN3	E&T 96113-0803
U4	MX10E8050IAQC	CN5	P-TWO AFN300-N2G1Z 30P
U5	MAX810	CN6	E&T 4500-10
U6	24LC16B	CN7	E&T 4500-03
U7	APM4461	CN8	E&T 96113-1103
U8	APL1085-33CE		
U9	APL1117-1.8V		
U10	LM4838		

2.



LABEL	Component	LABEL	Component
U3	SN74LVC14	CN1	D-SVB 15 PIN
U4	NT68F633	CN3	E&T 96113-0803
U5	24LC16B	CN9	E&T 4500-10
U6	NT68521	CN301	E&T 96113-1103
U10	APL1085-33CE	CN302	E&T 4500-03
U13	APL1117-2.5	J1	P-TWO AFN300-N2G1Z
U14	SI9435		
U501	LM4838		

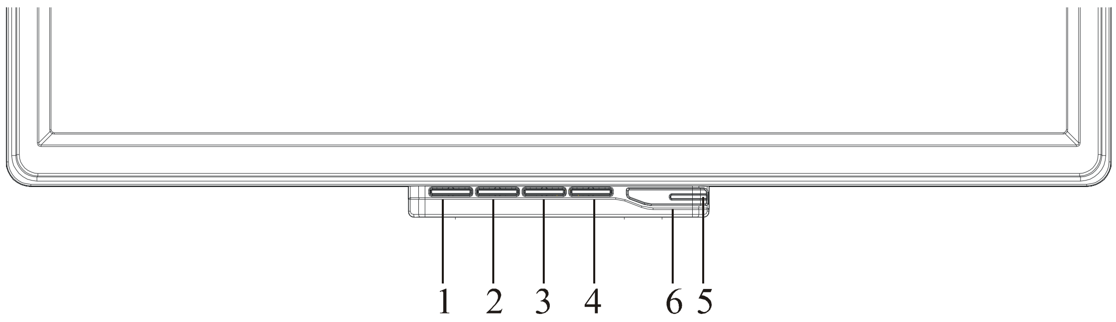
Software flow chart



General Instructions

Press the power button to turn the monitor on or off. The other control buttons are located at front panel of the monitor. By changing these settings, the picture can be adjusted to your personal preferences.

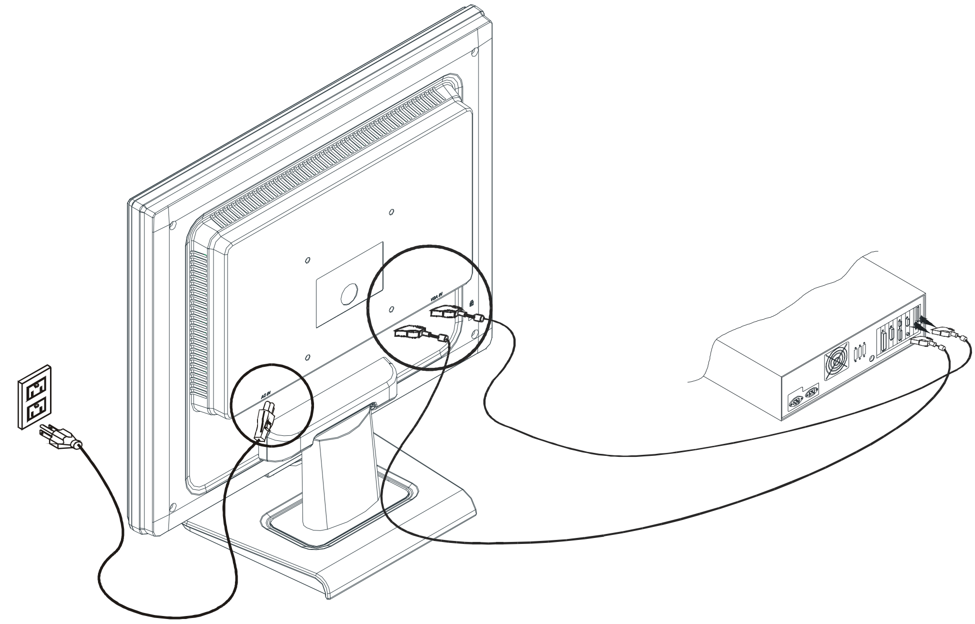
- The power cord should be connected.
- Connect the video cable from the monitor to the video card.
- Press the power button to turn on the monitor position. The power indicator will light up.



External Controls

1	Auto Adjust Key/Exit	4	MENU/ENTER
2	<	5	LED
3	>	6	⏻ / Power Key

System Installation



Connecting the Display

- Power off your computer.
- Connect one end of the signal cable to the LCD Monitor's VGA port.
- Connect the other end of the signal cable to the VGA port on your PC.
- Make sure connections are secure.

Connecting the AC Power

- Connect the power cord to the LCD Monitor.
- Connect the power cord to an AC power source.

Gap Spec.

The step between front bezel and back cover shall be within specification.

Top and Bottom

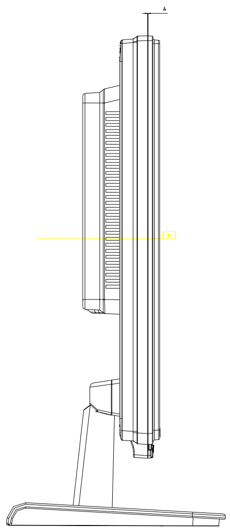
Back cover & Bezel concavity

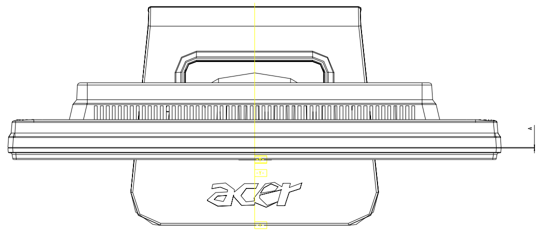
0.8mm ≤ A ≤ 1.3 mm

Left and Right

Back cover & Bezel concavity

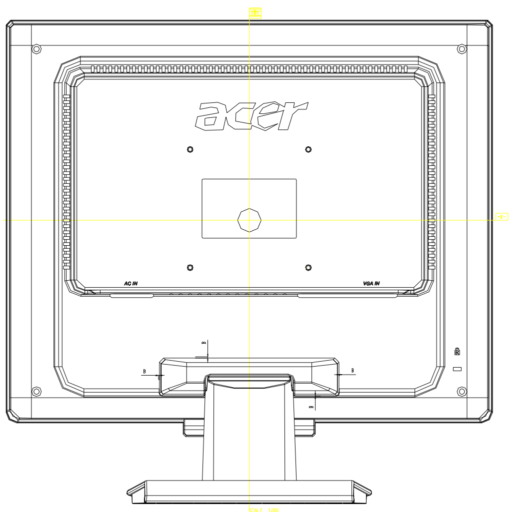
0.8mm ≤ A ≤ 1.3 mm





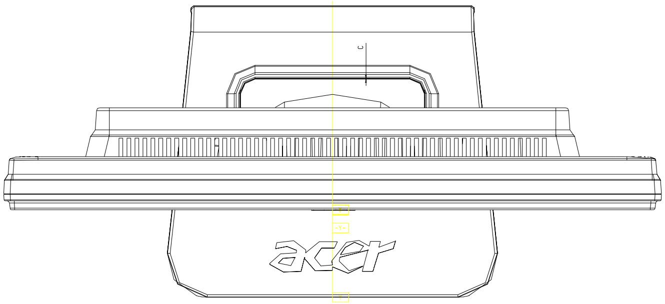
Back Cover & Hinge Cover concavity

0mm ≤ B ≤ 0.5mm



Base & Neck concavity

0mm ≤ C ≤ 0.6mm



Top and Bottom

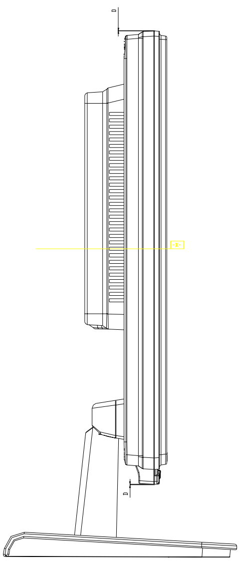
Back cover & Bezel step

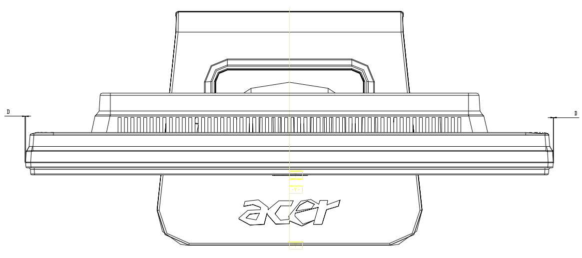
0mm ≤ D ≤ 0.8 mm

Left and Right

Back cover & Bezel step

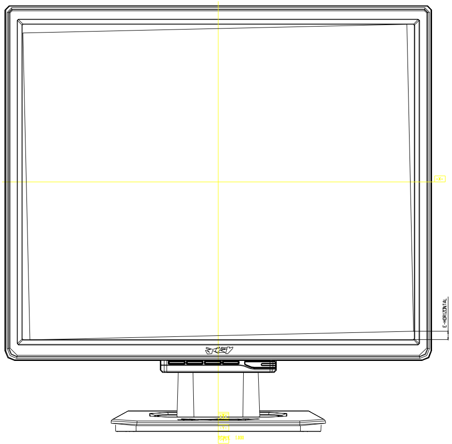
0mm ≤ D ≤ 0.8 mm



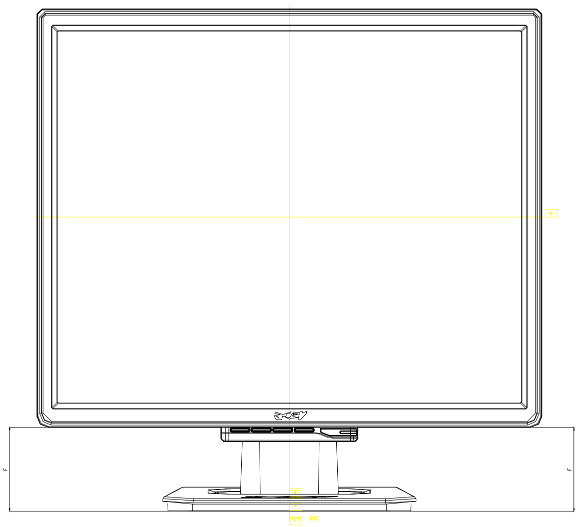


LCD Horizontally

The angle between front bezel and LCD unit in bottom side should not large than 1.0mm.



The distance of the LCD display unit from left side to right should not large than 4.0mm.



Tilt Base Rotation

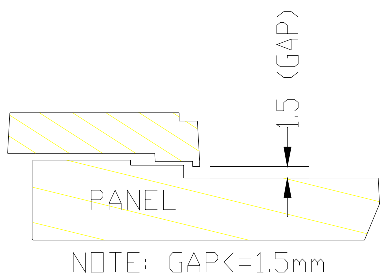
Tilt up 15 ± 2°/ down 5 ±2°

Plastic Material

For TCO99
Front Bezel PC+ABS
Back Cover PC+ABS
The Others ABS 94HB
For MPRII
Front Bezel ABS 94V-0
Back Cover ABS 94V-0
The Others ABS 94HB

GAP Spec.

Gap between panel with bezel is 0 mm < gap < 1.5 mm



Swivel title noise spec.

When adjust the monitor angle, the range should be limited -5º~ +15º and it should not have any noise.

POWER/Inverter Board

Description

This specification defined the performance and characteristic of power/inverter board.

It supplies the following outputs :

1). 5Vdc: Logic power.

2). 5Vaudio: Audio power.

3). 15Vinv: Inverter power.

Features

Input Voltage: 100 ~ 240 ±10％Vac

Input Frequency: 47 ~ 63Hz

Input power consumption: Less than 1.2W @ minimum load

Total output power: 55Wmax

Inverter brightness adjustment: Burst mode

Protection function: auto-recovery type

Interface Signals

Input

1. AC Inlet: HUAJIE SA-4S-066 or compatible.
2. J701: SC SCJ-0345-1-X-9 3.6D BLU 3P or compatible.

Output Connector & Pin Assignment:

1. The connecter was pitch 2.0mm.

PIN NO.	Function	Function
1	+5Vaudio	Audio power (optional).
2	GND	Audio ground
3	GND	Ground
4	GND	Ground
5	Vbri	Brightness control from logical board (0V to 3.3V)
6	----	-----
7	Ven	Inverter enable signal from logical board (high active , >3V)
8	+5Vdc	+5Vdc supply for logical board
9	+5Vdc	+5Vdc supply for logical board
10	+5Vdc	+5Vdc supply for logical board

2.Inverter-side connecter : SM02B-BHSS-1-TB(JST)

/ SM02(8.0)B-BHS-1(JST) or equivalent.

PIN NO.	Function	Comment
1	Cth	VBLH(High voltage)
2	Ctl	VBLL(Low voltage)

Electrical Specification:

AC-DC Electrical specification

3.4.1.1 Input Specification

No	Item	Condition	Min.	Typ.	Max.	Unit
1	Input Voltage	-----	100	---	240	Vac
2	Input requency	-----	47	---	63	Hz
3	Input Current	-----	---	---	1.0	Arms
4	Inrush Current	Cold Start @Vin=100Vrms	---	---	30	A0-P
		Cold Start @Vin=240Vrms		---	50	A0-P
5	Hold Up Time	@full load & 100Vac input	10	---	---	ms
6	Turn on time	Vin =110Vac	---	1.0	---	S
7	Efficiency	Full load	---	70	---	%
8	Consumption	Vin=240Vac,@ no load	---	---	1	W

3.4.1.2 AC-DC Output Specification

	Tolerance	Output Current		Voltage Tolerance
Output oltage	---	MIN	MAX	
+5Vdc	+5 /-3 %	0.05A	1.5A	4.85~5.25V dc
+15Vinv	+35/-5 %	0A	2A	20~14.3Vdc
+5Vaudio	±5%	0A	0.6A	4.75~5.25Vdc
Ripple	Measured at DC output terminals which are paralleled with a 10uf Ecap &0.1uf Ceramic cap. 2.Band width is limited within 20MHz	---	1%	+5Vdc:50mVp-p +15Vinv:150mVp-p
Noise		---	3%	+5Vdc:150mVp-p +15Vinv:450mVp-p
Dynamic Load Regulation	50~100% or 100~50% load change of any DC output @50% duty of	---	±5%	---
Over / Under	@ Power line on/off	---	±5%	---

*+5Vdc load regulation test: the +15Vinv loading at 2.0A

*+15Vinv load regulation test: the +5Vdc loading at 1.5A

3.4.1.3 Protection function

1) SCP: Short circuit protection must be acted on both outputs

2) OPP: Should be protected when output power consumption is within 60W ~ 75W

Inverter Electrical Specification:

For Samsung LTM190EX

	Condition	Min.	Typ.	Max.	Unit
Input Voltage	---	---	15	---	V
Input Current	---	---	1.5	---	A
Backlight ON/OFF Control	ON		3.3		V
	OFF		0		V
Brightness Adjust	Min. Luminance / Max. Luminance	---	30%	---	---
Output Voltage	Vin=15V, Iout=7.5mA		650		Vrms
Brightness	lamp current in 7.5mA	250	300	---	Cd/m²
Output Current(Each connector)	Vbri=0.4V~3.3V	4	7.5	8	mA
Frequency	---	40	---	60	KHz
Lamp start voltage	@0℃	1650	---	---	Vrms

Striking Time	---	---	1	---	S
Lamp Current Balance	---	---	±0.35	---	mA
Efficiency	Vin=15V	---	80	---	%
Operating Life Time	---	50000	---	---	Hr

*.The open lamp voltage is testes at output connector terminal

SAFETY

Leakage Current: 0.25mA @ 100Vac

Insulation Resistance: more than 3M ohms while withstanding a voltage of 500Vac

Hi-Pot: 3Kvac with using 3mA cut off current

Power Consumption

The monitor is equipped with a power-management according to the below.

There is a delay of 5s … 7s before the transition from On-state to any power saving state to avoid unintentionally entering of a power saving stage during display resolution and timing mode changes.

Transition from any power saving state to another can be instantaneous.

The recovery from Off-state requires no manual power on.

Mode	H-Sync.	V-Sync.	Video	Pw-cons.	Indicator	Rec. time*
Power-On	on	on	active	< 60W	Green LED	--
Power-off	off	off	blanked	< 3 W	Orange LED	< 5S
Switch-off				< 3 W	Dark LED	

SYNC. On means: Normal operation

SYNC. Off means: H sync. F < 10KHz duty cycle > 25%

V sync. F < 10Hz duty cycle > 25%

CONNECTORS / CONTROLS

Connectors

- Power : Monitor rear side : AC Inlet
- Analog RGB : Monitor rear side / Data Cable : 15-pin D-sub female / male

Pin – Assignment of 15-pin D-sub:

1	Red Video	9	+5V FOR DDC
2	Green Video	10	Detect
3	Blue Video	11	Serial Data for ISP
4	Serial Clock for ISP	12	Serial Data for DDC
5	Ground	13	H-Sync.
6	Red Ground	14	V-Sync.
7	Green Ground	15	Serial Clock for DDC
8	Blue Ground		

- Audio : Monitor rear side :
  -PC I/P for PC : 3.5mm Stereo female

Monitor Control Keys

KEY : Power , Menu , Adjust +/- , Vol +/-, Auto

Position Of Controls

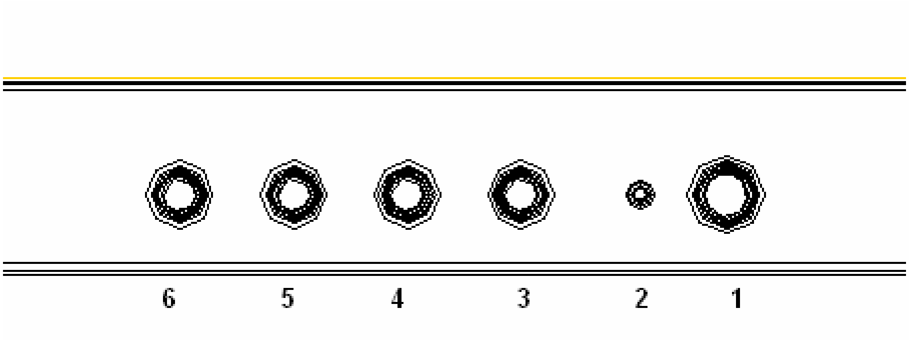
Position of all switches : Bottom side of front bezel

Position of LED : Bottom side of front bezel

Chapter 2

Operating Instructions

CONTROLS



Control panel (monitor front panel)

1. Power ON/OFF switch, push to ON and push to OFF. (toggle switch)

2. Power LED, will be green when monitor is on; be amber when in power saving mode.

3. Function select.

4. Adjust increase.

5. Adjust decrease.

6. Auto adjust.

Main OSD Menu:

Outline:

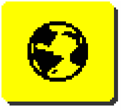
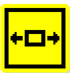
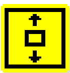
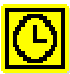
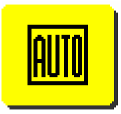
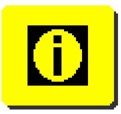
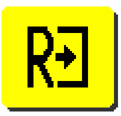
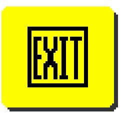




(option)

The description for control function :

Main Menu Icon	Sub Menu Item	Sub Menu Icon	Description	Adjustment Range	Reset Value
	Contrast		Contrast from Digital-register.	0-100	Recall Cool Contrast Value
	Brightness		Backlight Adjustment	0-100	Recall Cool Brightness Value
	Focus		Adjust Picture Phase to reduce Horizontal-Line noise	0-100	Do Auto Config
	Clock		Adjust picture Clock to reduce Vertical-Line noise.	0-100	Do Auto Config
	H. Position		Adjust the horizontal position of the picture.	0-100	Do Auto Config
	V. Position		Adjust the verticalposition of the picture.	0-100	Do Auto Config
	Warm	N/A	Recall Warm Color Temperature from EEPROM.	N/A	The Color Temperature will be set to Cool.
	Cool	N/A	Recall Cool Color Temperature from EEPROM.	N/A	
	User / Red	R	Red Gain from Digital-register.	0-100	100
	User / Green	G	Green Gain Digital-register.	0-100	100
	User / Blue	B	Blue Gain from Digital-register.	0-100	100

	English	N/A	Set OSD display language to English.	N/A	The Language will be set to English.
	繁體中文	N/A	Set OSD display language to Tranditional Chinese.	N/A	
	Deutsch	N/A	Set OSD display language to German.	N/A	
	Français	N/A	Set OSD display language to French.	N/A	
	Español	N/A	Set OSD display language to Spain.	N/A	
	Italiano	N/A	Set OSD display language to Italian.	N/A	
	简体中文	N/A	Set OSD display language to Simplified Chinese.	N/A	
	日本語	N/A	Set OSD display language to Japanese.	N/A	
	H. Position		Adjust the horizontal position of the OSD.	0-100	50
	V. Position		Adjust the verticalposition of the OSD.	0-100	50
	OSD Timeout		Adjust the OSD timeout.	10-120	10
	Auto Config	N/A	Auto Adjust the H/V Position, Focus and Clock of picture.	N/A	N/A
	N/A	Source Change	Analog and Digital source change.(option)	N/A	N/A
	Information	N/A	Show the resolution, H/V frequency and input port of current iput timing.	N/A	N/A
	Reset	N/A	Clear each old status of Auto-configuration and set the color temperature to Cool.	N/A	N/A
	Exit	N/A	Exit OSD	N/A	N/A

OSD Message:

Outline:



The description for OSD Message :

Item	**Description**
Auto Config Please Wait	When User Press Hot-Key “Auto”, will show this message, and the monitor do the auto config function.
Input Not Supported	When the Hsync Frequency, Vsync Frequency or Resolution is out of the monitor support range, will show this message. This message will be flying.
Cable Not Connected	When the video cable is not connected, will show this message. This message will be flying.
No Signal	When the video cable is connected, but the is no active signal input, will show this message, then enter power saving.

LOGO:

When the monitor is power on, the LOGO will be showed in the center.

Item of Factory menu

Vendor may customize design and add adjustment items Factory menu as far as all required items are included.

1) Bright

Adjust Brightness and Contrast value to Max.

2) Auto Balance

Adjust each R, G, B contrast (gain) and offset.

Method of auto adjust is depends on hardware.

Adjusted value of R, G, B gain shall be used for initial value of Contrast in user menu.

All value shall be adjustable manually.

This function shall be located in 3. tag of Factory menu.

3) Factory color temp data edit

Following data for color temp shall be editable manually.

-color temp default preset No.

Plug and play

Plug & play DDC2B feature

This monitor is equipped with VESA DDC2B capabilities according to the VESA DDC STANDARD. It allows the monitor to inform the host system of its identity and, depending on the level of DDC used, communicate additional information about its display capabilities. The communication channel is defined in two levels, DDC2B.
The DDC2Bis a bidirectional data channel based on the I^2C protocol. The host can request EDID information over the DDC2B channel.

THIS MONITOR WILL APPEAR TO BE NON-FUNCTIONAL IF THERE IS NO VIDEO INPUT SIGNAL. IN ORDER FOR THIS MONITOR TO OPERATE PROPERLY, THERE MUST BE A VIDEO INPUT SIGNAL.

This monitor meets the Green monitor standards as set by the Video Electronics Standards Association(VESA) and/or the United States Environmental Protection Agency (EPA) and The Swedish Confederation Employees (NUTEK). This feature is designed to conserve electrical energy by reducing power consumption when there is no video-input signal present. When there is no video input signal this monitor, following a time-out period, will automatically switch to an OFF mode. This reduces the monitor's internal power supply consumption. After the video input signal is restored, full power is restored and the display is automatically redrawn. The appearance is similar to a "Screen Saver" feature except the display is completely off. The display is restored by pressing a key on the keyboard, or clicking the mouse.

Using The Right Power Cord

The accessory power cord for the Northern American region is the wallet plug with NEMA 5-15 style and is UL listed and CSA labeled. The voltage rating for the power cord shall be 125 volt AC.
Supplied with units intended for connection to power outlet of personal computer: Please use a cord set consisting of a minimum No. 18 AWG, type SJT or SVT three conductors flexible cord. One end terminates with a grounding type attachment plug, rated 10A, 250V,CEE-22 male configuration. The other end terminates with a molded-on type connector body, rated 10A, 250V, having standard CEE-22 female configuration.
Please note that power supply card needs to use VDE 0602, 0625, 0821 approval power cord in European counties.

White Color Temperature

White color temperature is 4 preset as 9300, 7500,6500 and User,

Default value of user color should be user which is maximum setting for panel.

Target of color setting

Color Temp.	Color Coordinate		Tolerance	Color Coordinate		Tolerance
	x	y		u'	v'	
9300K	0.283	0.297	±0.03	0.189	0.446	u'v' ≤ 0.01*
6500K	0.313	0.329	±0.03	0.198	0.469	u'v' ≤ 0.01*
User	-	-		-	-	-

*) TCO'0X A.2.6.1 requirement

User should follow "Microsoft Windows Color Quality Specification for Liquid Crystal Display OEM's".
(http://www.microsoft.com/hwdev/tech/color/ColorTest.asp)

Audio Technical specification

General Description:

Output power	: 1W + 1W maximum
Total harmonic distortion	: Less than 1 % (except speakers distortion)
Input signal sensitivity	: 0.5 Vrms for full output
Input impedance	: 47 Kohm +/- 5 %
Frequency response range	: 20Hz – 20kHz (except speakers response)
Difference of L and R output	: Less than 2 dB

Electrical characteristics (Tamb=25°)

Audio amplifier(USE Panasonic VP-7723A Audio Analyzor.)

Item	Audio Input	Freq.	Spec.			Comment
			Min.	Typ.	Max.	
Input Voltage(V)			-	0.5Vms	-	
Input Current(m A)			-	500	800	
Audio Voltage Gain	500m Vrms	1KHz	-	-	6 d B	Volume Max.,load 4 Ω
Frequency Response	500m Vrms	300Hz-20KHz	-10dB	-	+10d B	Volume Max.,load 4 Ω
Signal to Noise ratio	500m Vrms	1KHz	-	-	-40dB	Volume Max.,load 4 Ω
Total harmonic distortion	500m Vrms	1KHz			1%	except speakers distortion
Cross talk	500m Vrms	1KHz	-	-	-30dB	Volume Max.,load 4 Ω
Output Watt.	500m Vrms	1KHz	-	-	0.5W	Volume Max.,load 4 Ω
Volume Control			-	-	-	Analog

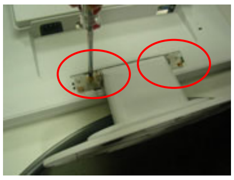
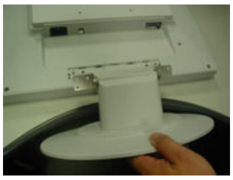
Chapter 3

Machine Disassembly and Replacement

Disassembly Procedure

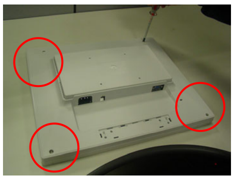
Disassemble the base

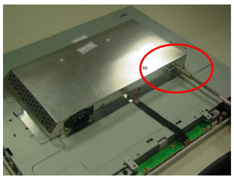
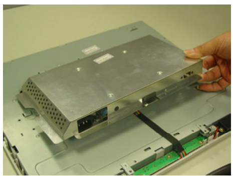
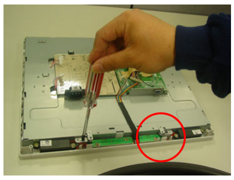
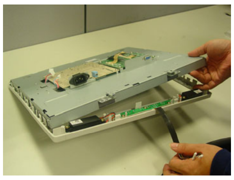
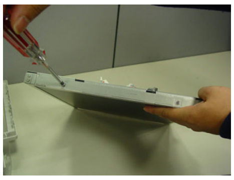
1. Remove the neck cover.
2. Remove the four screws to release the hinge.
3. Remove the base

Disassemble the chassis

1. Remove the four screws to release the back cover.
2. Remove the two screws to release the EMI cover from chassis.
3. Remove the two screws from VGA connector.
4. Then take the chassis.
5. Remove the two screws from bezel.
6. To separate the chassis and bezel.
7. Remove the four screws from chassis and release the panel.

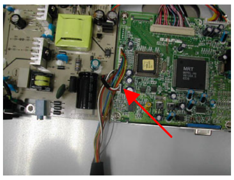
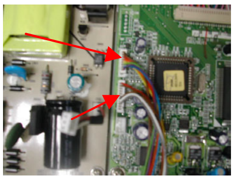
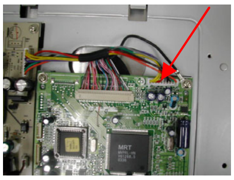
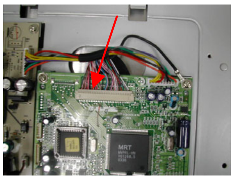
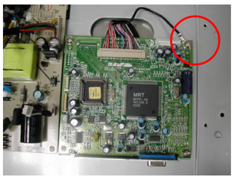
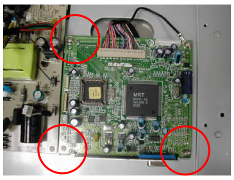




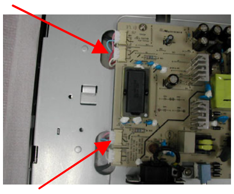
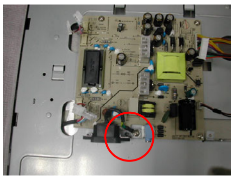
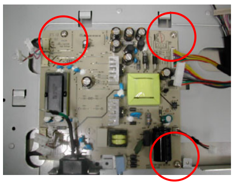
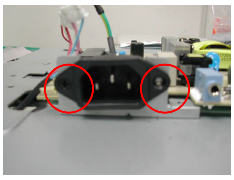
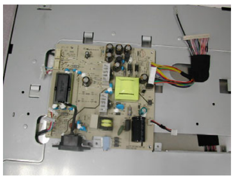
Disassemble the main board

1. Disassemble audio line from power board.
2. Disassemble two VL-VK lines from VL board.
3. Disassemble power line from VL board.
4. Disassemble FPC line from VL board.
5. Remove the one screw to release line from Chassis.
6. Remove the three screws from Chassis and release the main board.

Disassemble the power board

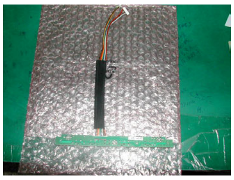
1. Disassemble two voltage lines from power board.
2. Remove the one screw to release line from Chassis.
3. Remove the three screws from Chassis.
4. Remove the two screws to release power board from Chassis.
5. Then take the power board from the chassia.

Disassemble the key board

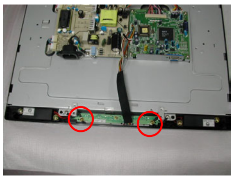
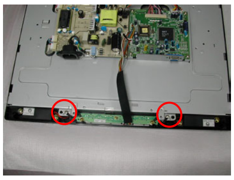
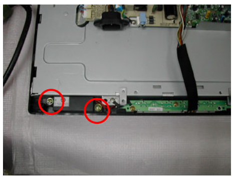
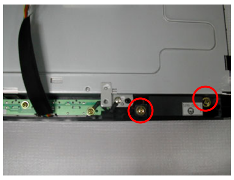
1. Remove the one screw to release VK board from bezel.
2. Disassemble the two speaker lines from VK board.





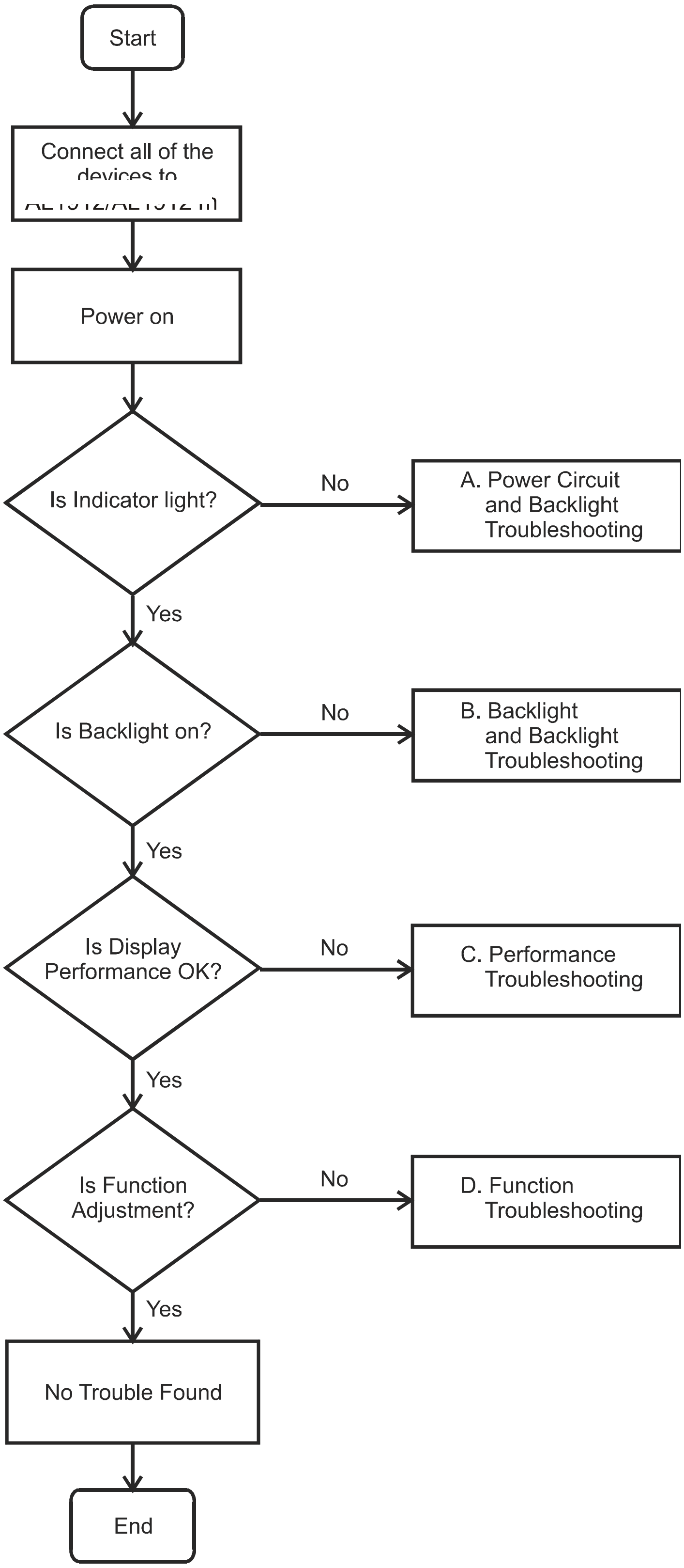
Disassemble the speakers

1. **Remove the two screws to release line and VK board from bezel.**
2. **Remove the two screws to release line and chassis from bezel.**
3. **Remove the four screws from bezel.**

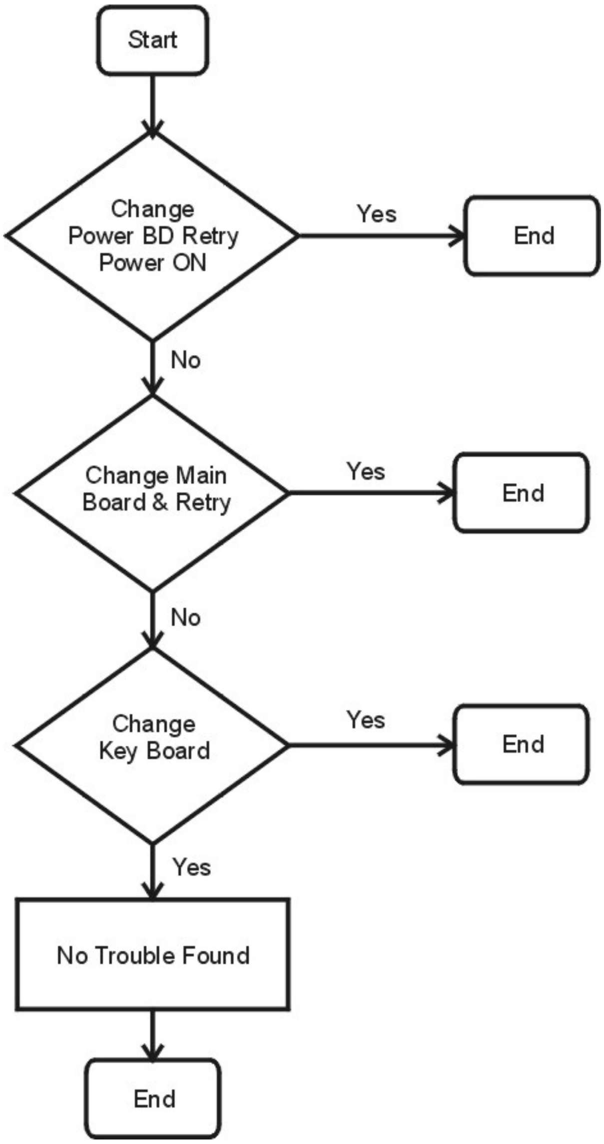
   

Troubleshooting

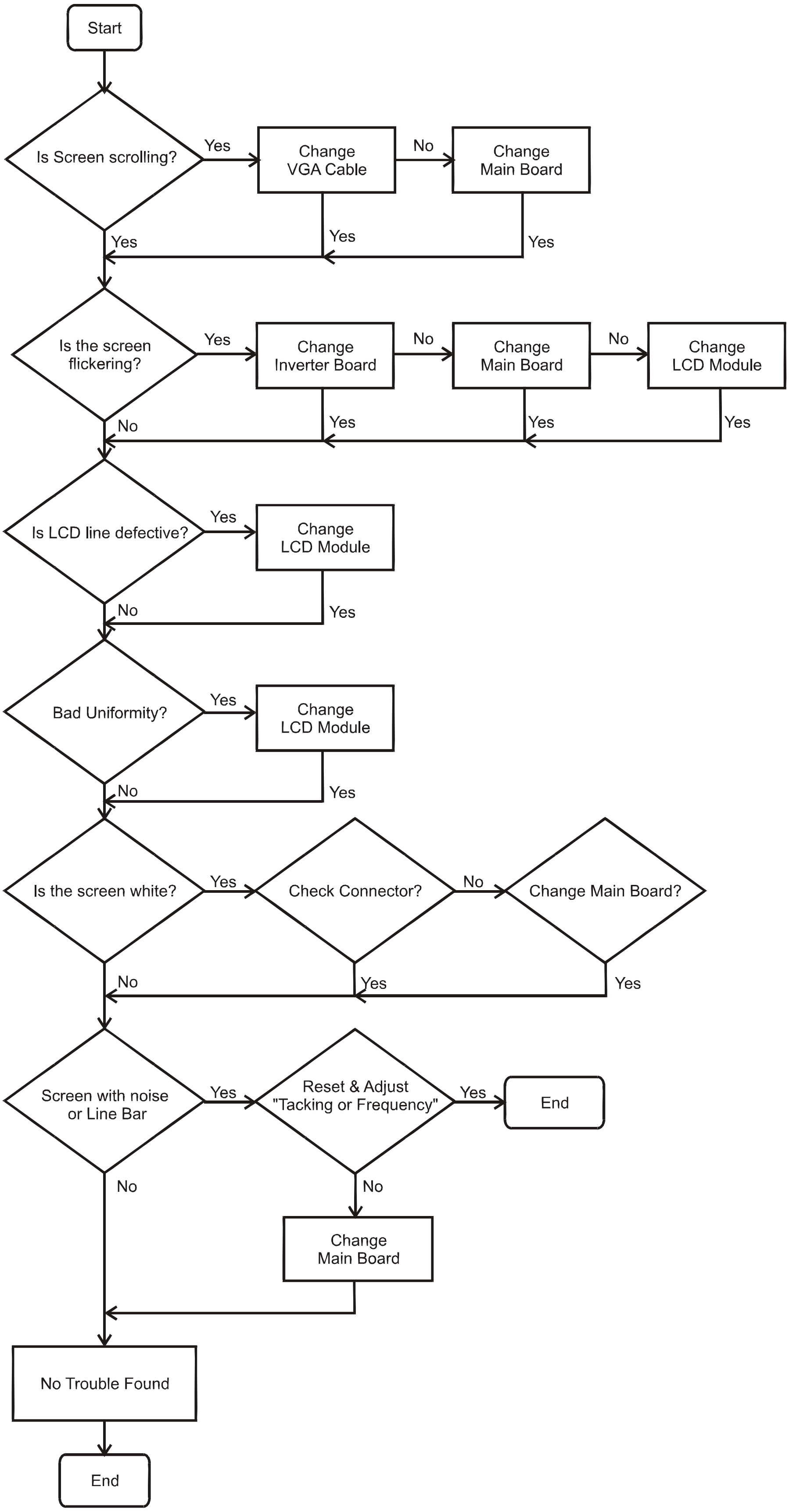
Main Procedure



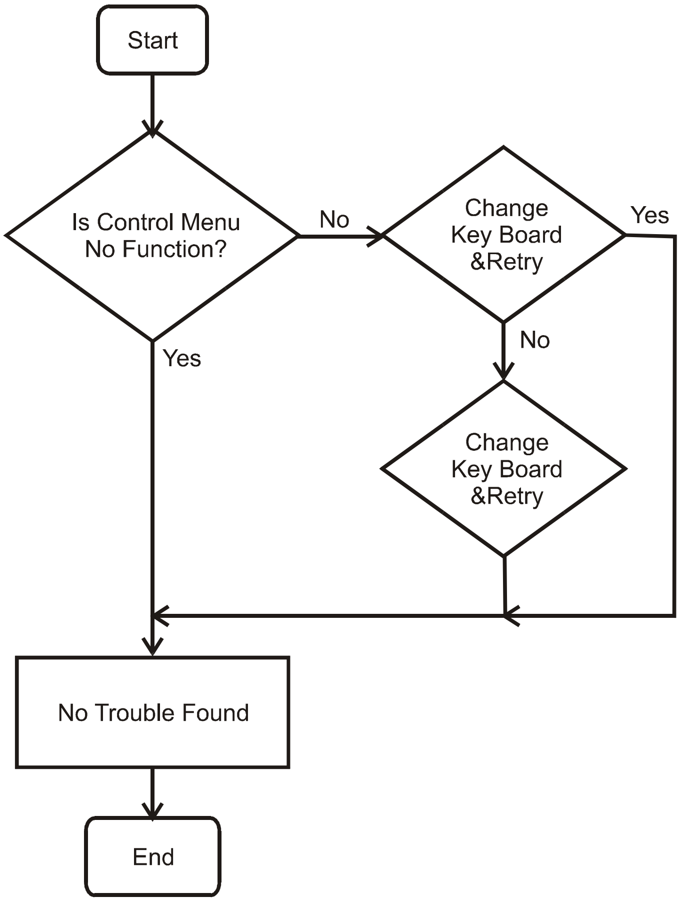
Power Circuit and Backlights Troubleshooting



Performance Troubleshooting



Function Troubleshooting



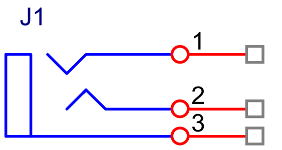
Connector Information

Phonejack stereo

PIN1. right : CEE22 typed connector

PIN2. Left

PIN3. Gnd : Line-in receptacle

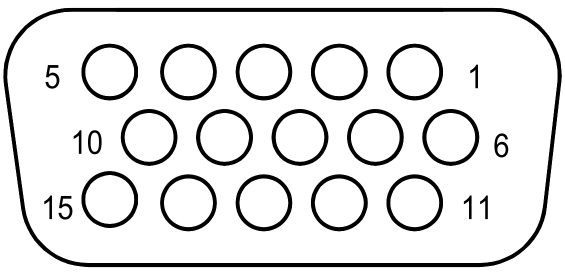


PHONEJACK STEREO

Video input Connector

Analog Video input Connector: 15pins mini D-Sub

Table 2.4.5. Pin assignment for D-sub connector



PIN NO.	Separate Sync
1	RED VIDEO
2	GREEN VIDEO
3	BLUE VIDEO
4	GROUND
5	GROUND
6	RED GROUND
7	GREEN GROUND
8	BLUE GROUND
9	PC5V (+5V DDC)
10	CABLE DETECTION
11	GROUND
12	SDA
13	H.SYNC
14	V.SYNC
15	SCL

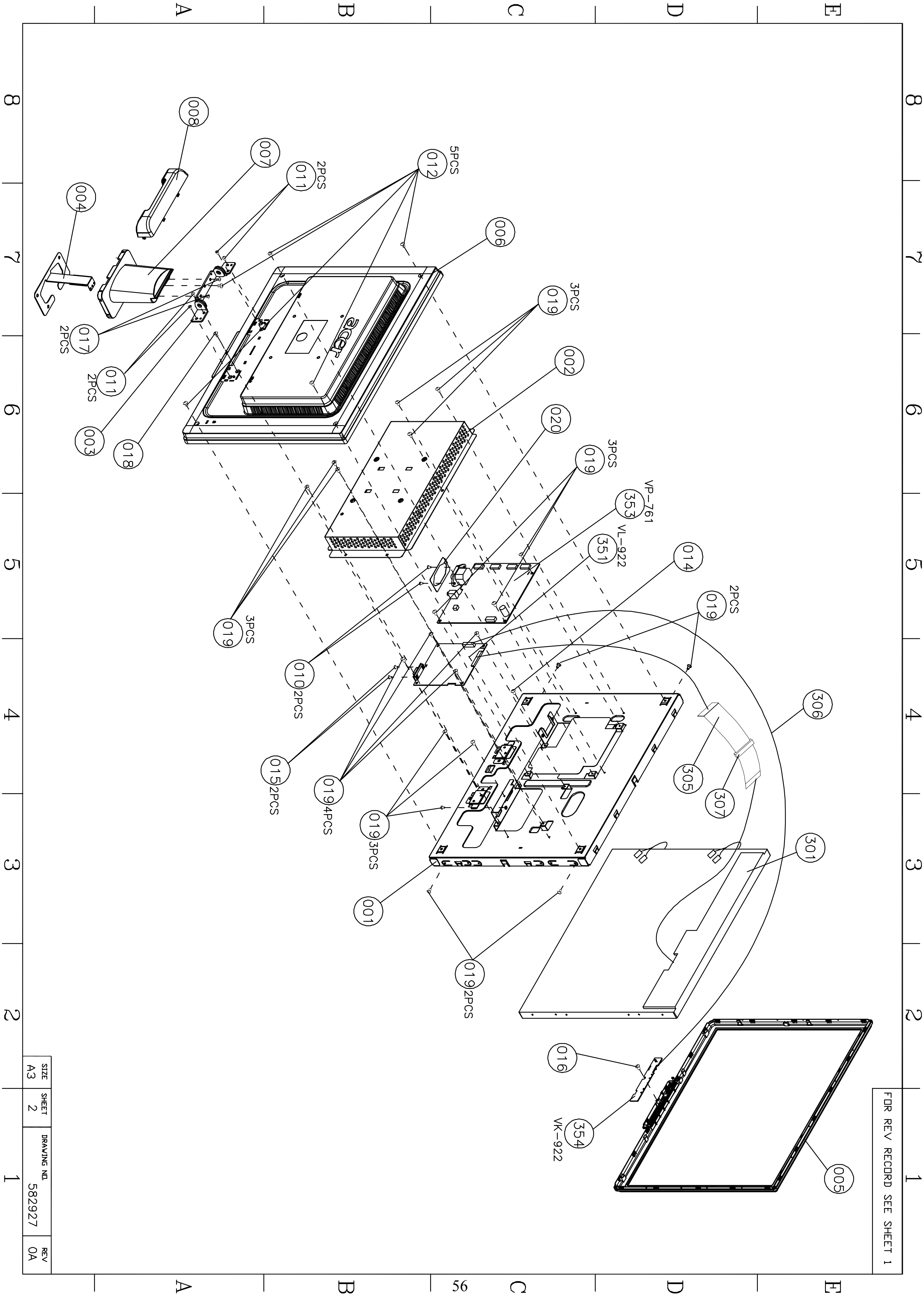
Chapter 6

FRU (Field Replaceable Unit) list

This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of AL1916. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

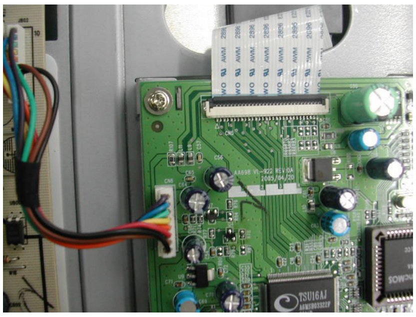
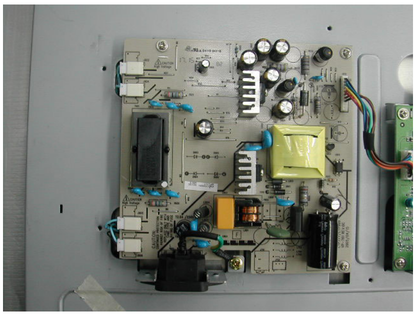
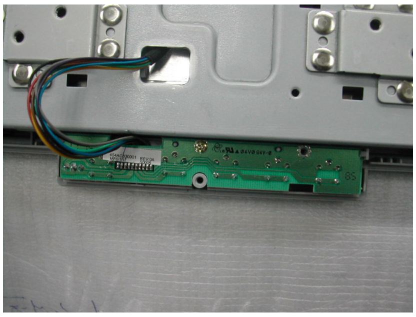
NOTE : Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel(http://aicsl.acer.com.tw/spl/). For whatever reasons a part number change is made, it will not be noted in the printed Service Guide. For ACER-AUTHORIZED CERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the local FRU list provided by your regional Acer office to order FRU parts repair and service of customer machines.

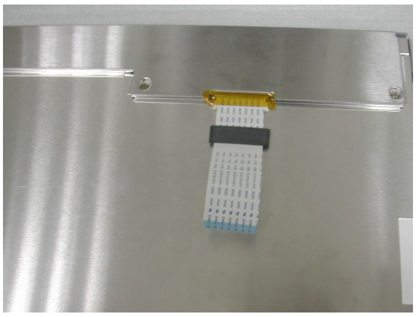
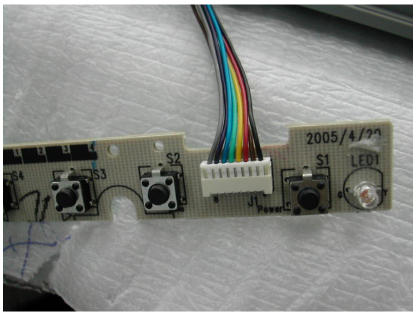
NOTE: To scrap or to return the defective parts, you should follow the local government ordinance or regulations on how best to dispose it, or follow the rules set by your regional Acer office on how to return it.


FOR REV RECORD SEE SHEET 1
008
007
011 2PCS
012 5PCS
004
006
017 2PCS
011 2PCS
003
018
019 3PCS
002
020
019 3PCS
353 VP-761
351 VL-922
014
019 2PCS
019 3PCS
010 2PCS
015 2PCS
019 4PCS
019 3PCS
306
305
307
301
001
019 2PCS
016
354 VK-922
005
SIZE A3
SHEET 2
DRAWING NO. 582927
REV 0A

Part list

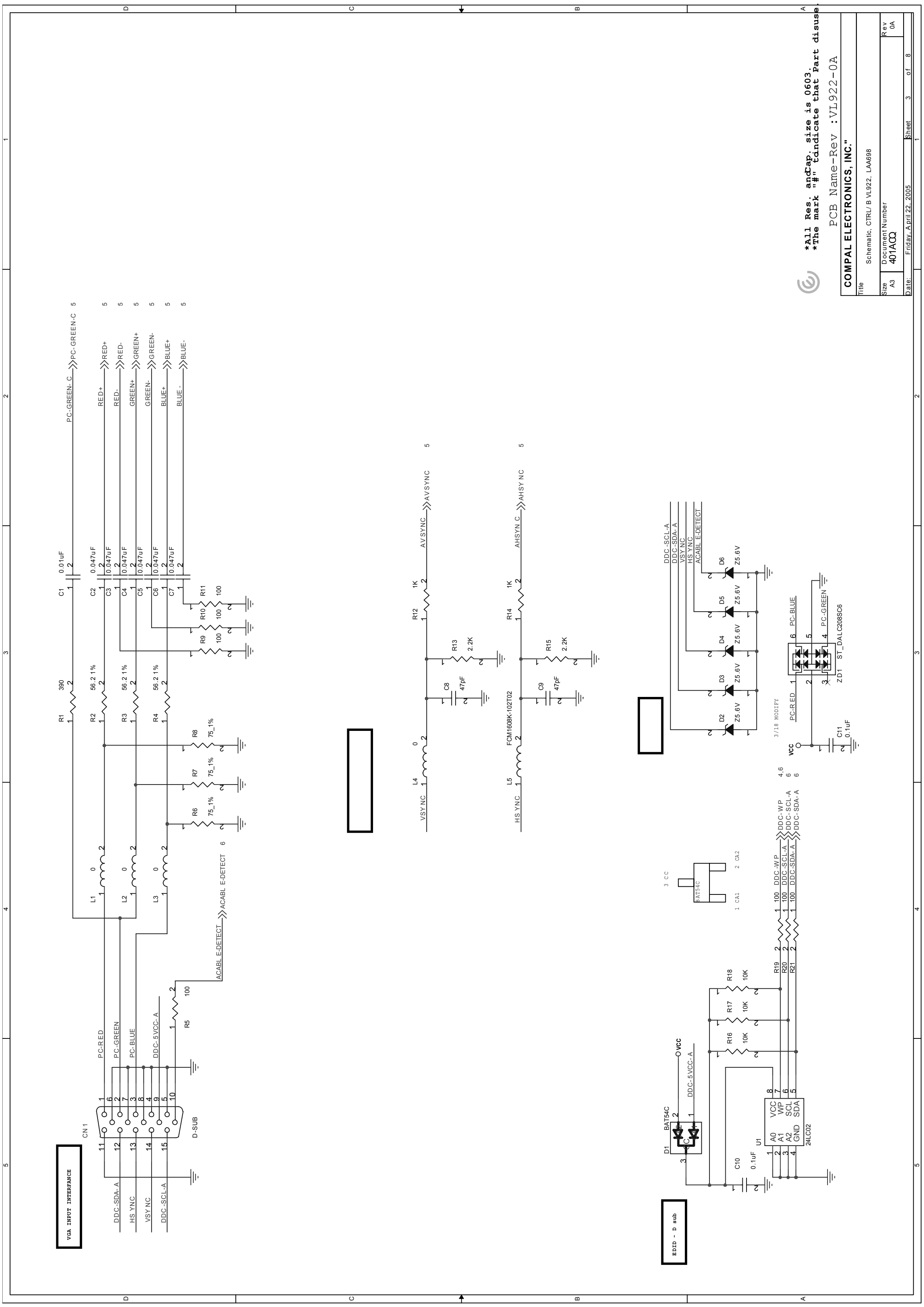
No.	Photo	Part Name	Part No.
1		Hinge Cover	FAAA6932000
2		Base Assy	FAAA691D000
3		Rear Cover	FAAA6914000
4		Base	FAAA691C000
6		Neck	FAAA6921000

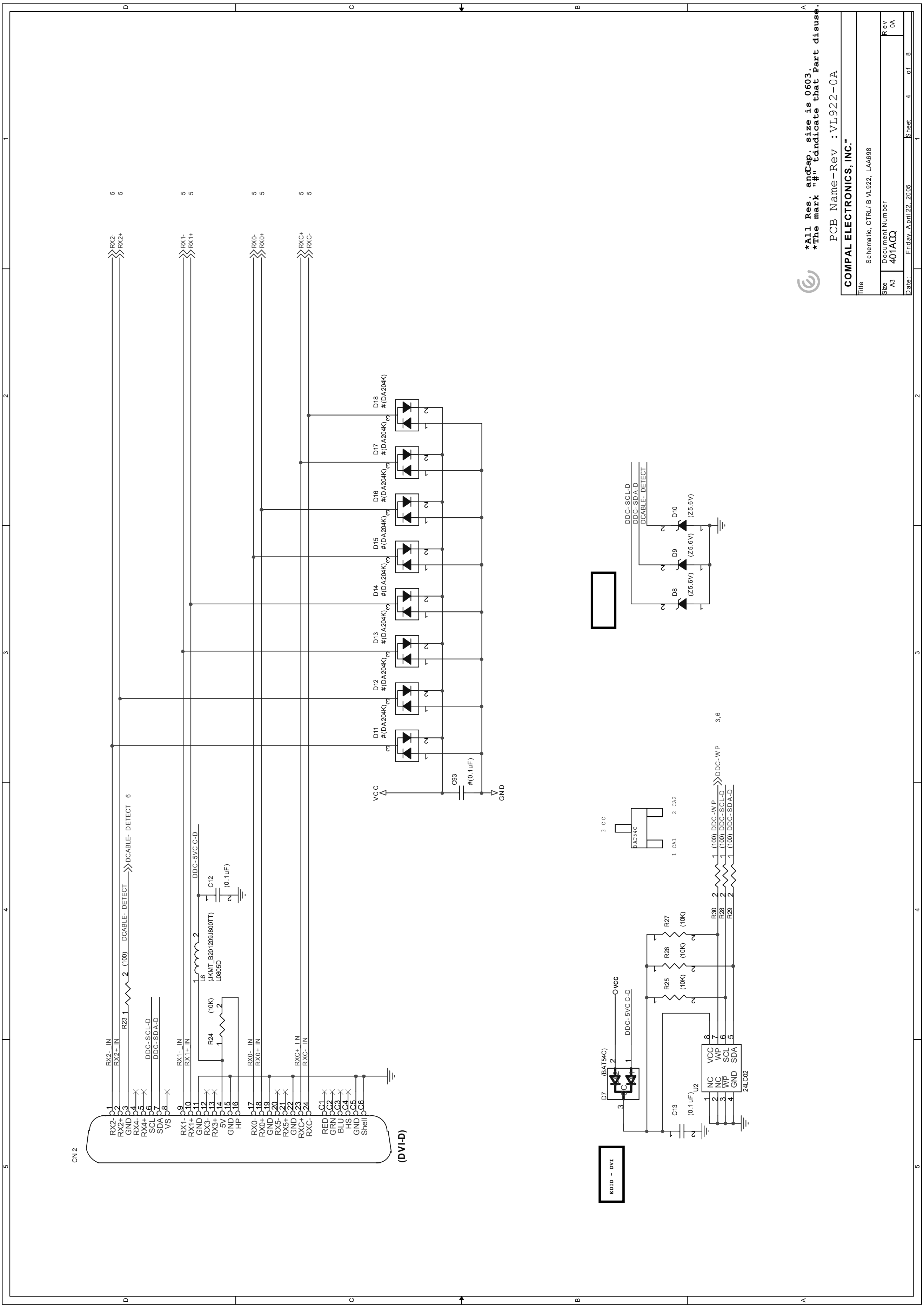
7		Main Shield	ECAR9914A00
8		MB	AU:461ACQ30011 SAMSUNG:461ACQ30001
9		Power Board to MB cable	AU: 453AC530051 Samsung: 453AC530051
10		Inverter Board	AU: 453AC530051 Samsung: 453AC530051
11		Front Bezel	FAAA6911000
12		Keyboard to MB Cable	DCO20191700

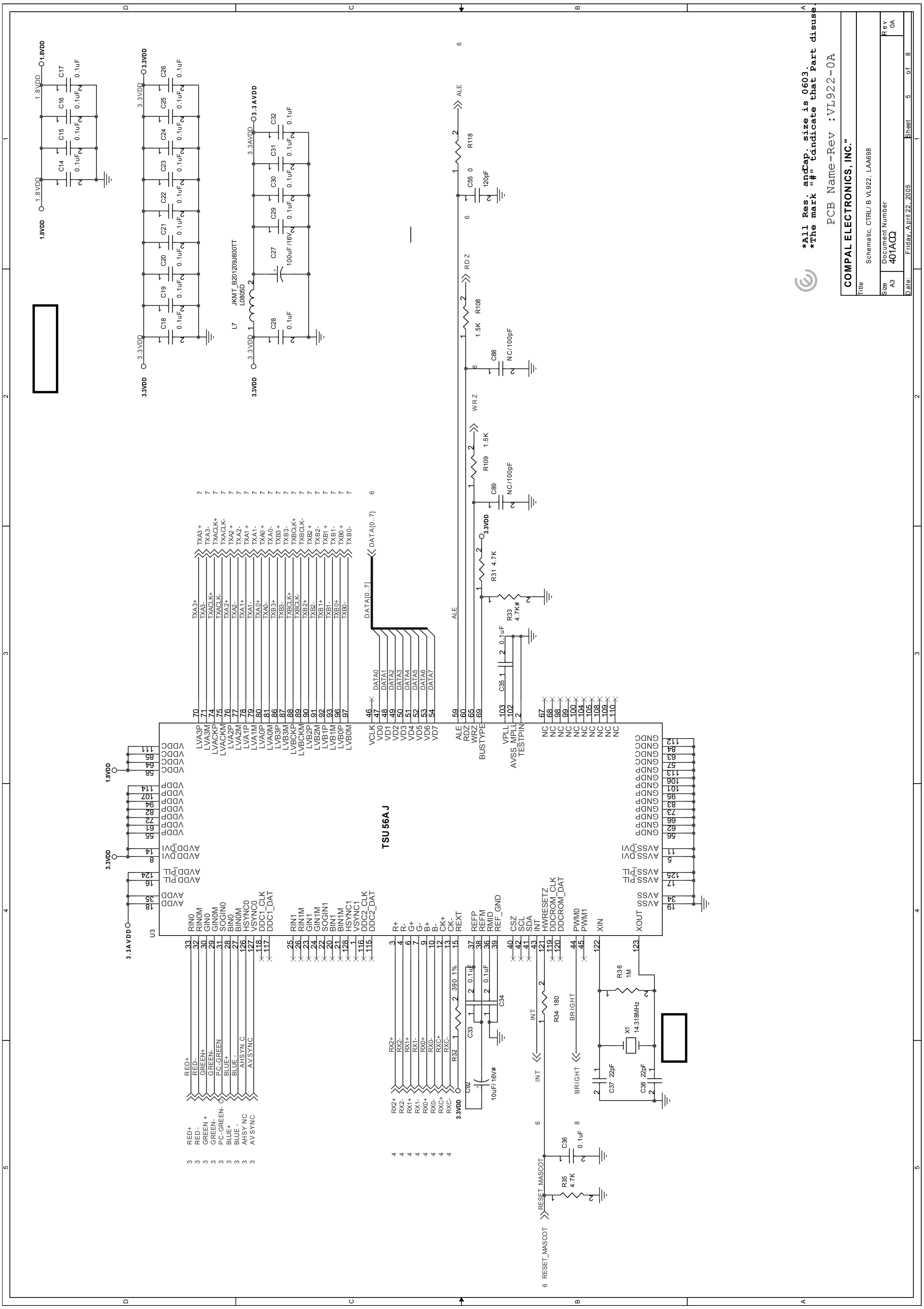
13		Frame	ECAR9915A00
14		LCD (R)	AC6VA1901R0 AC6VT1901R5
15		Panel to MB cable	NBX30001271 NBX30001600
16		Function Board	454AC830001

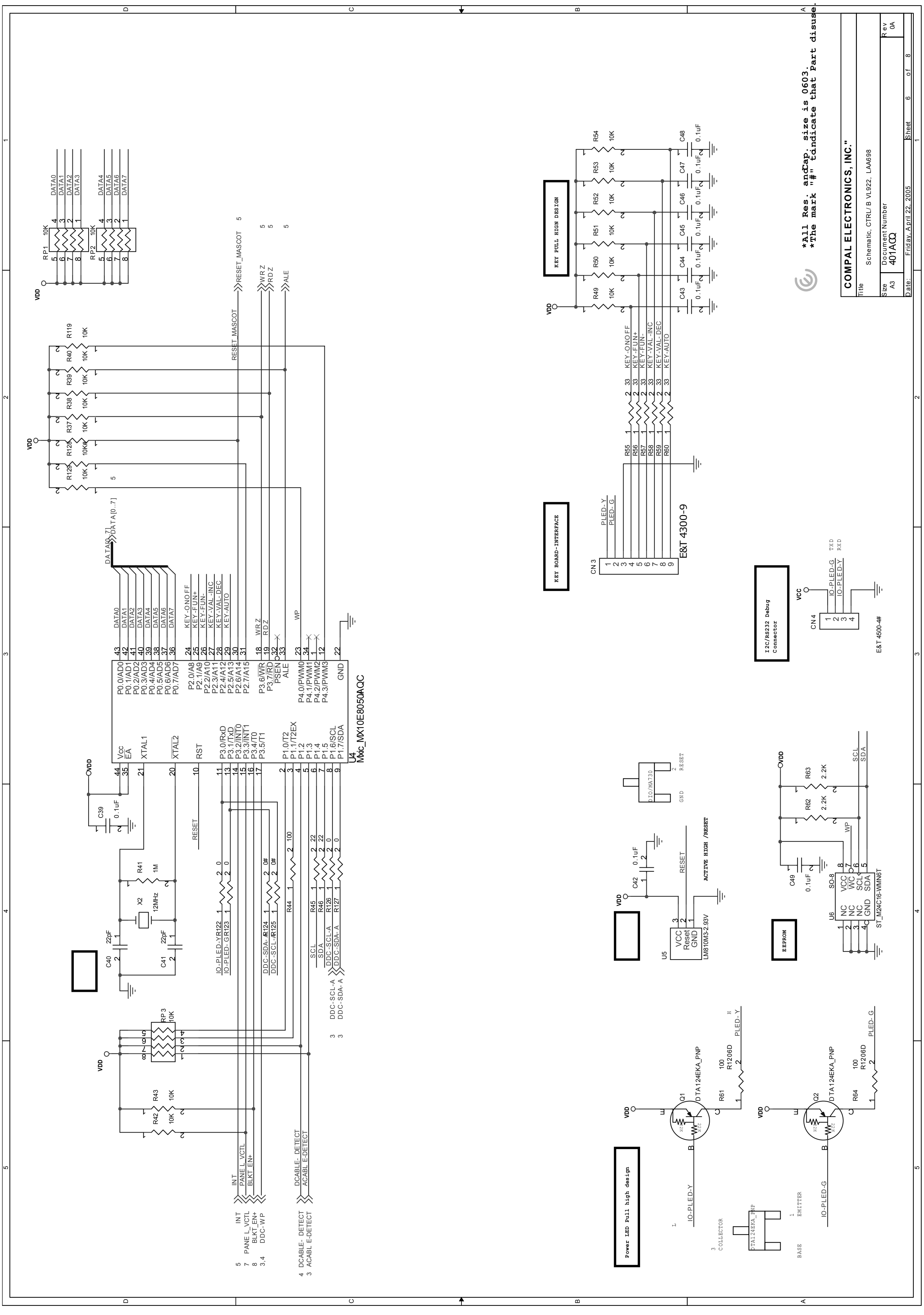
Chapter 7

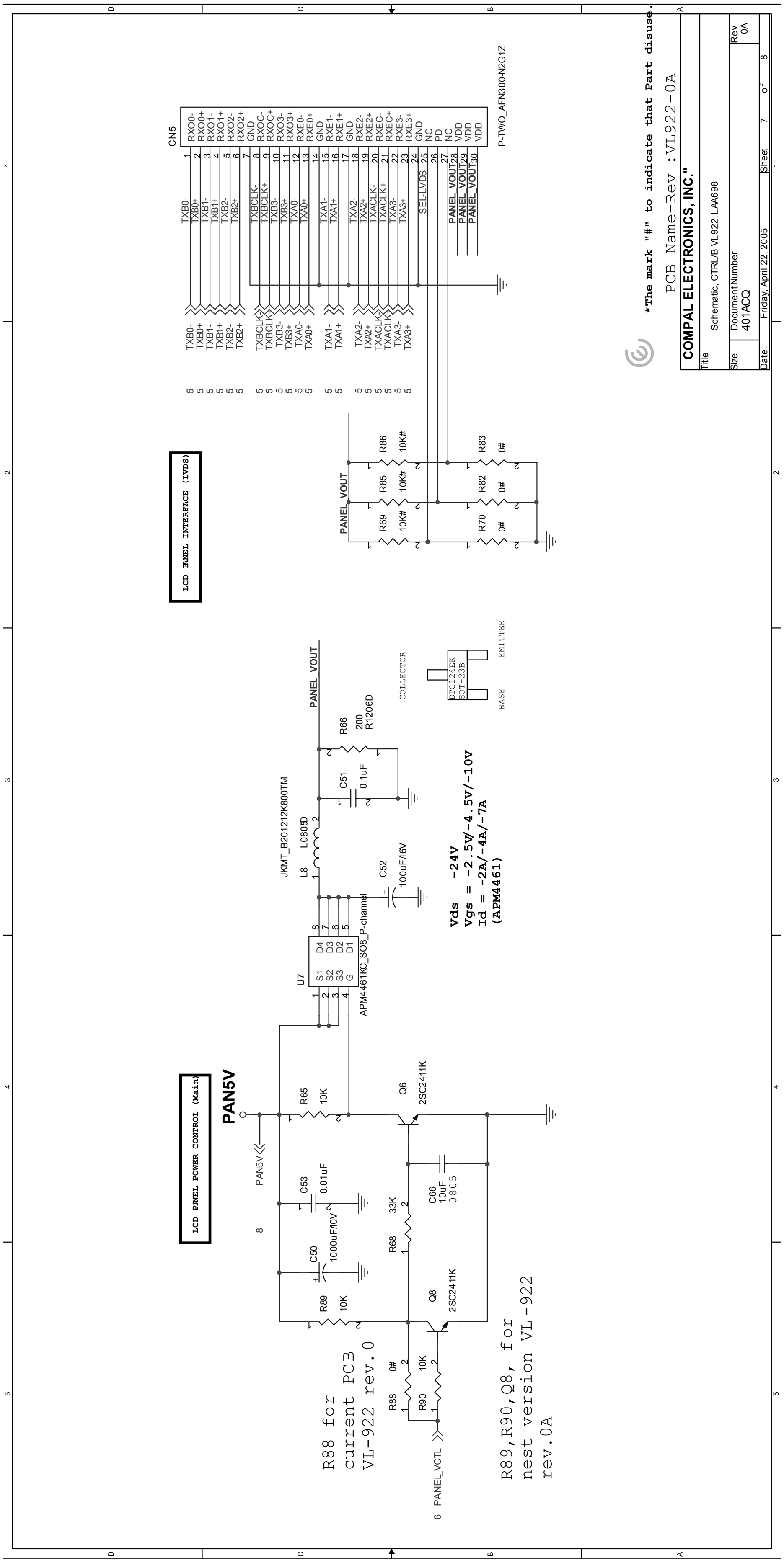
Schematic Diagram



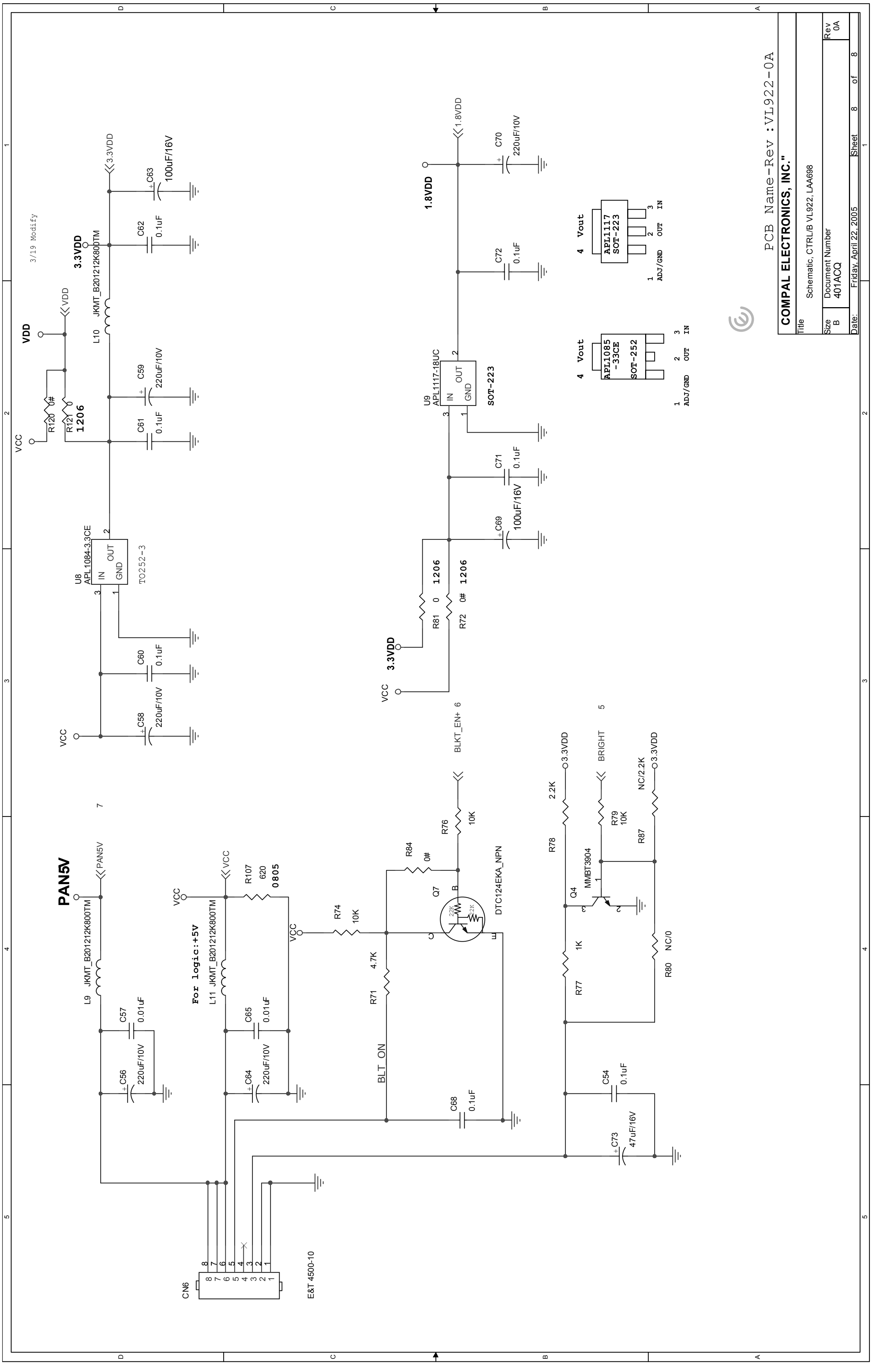

*All Res. and Cap. size is 0603
*The mark "#" to indicate that Part disuse.
PCB Name-Rev :VL922-0A
COMPAL ELECTRONICS, INC.
Title
Schematic, CTRL/ B VL922, LAA698
Size
A3
Document Number
401ACQ
Rev
0A
Date: Friday, April 22, 2005
Sheet 4 of 8
EDID - DVI
(DVI-D)
CN2
24LC02
U2
VCC
GND

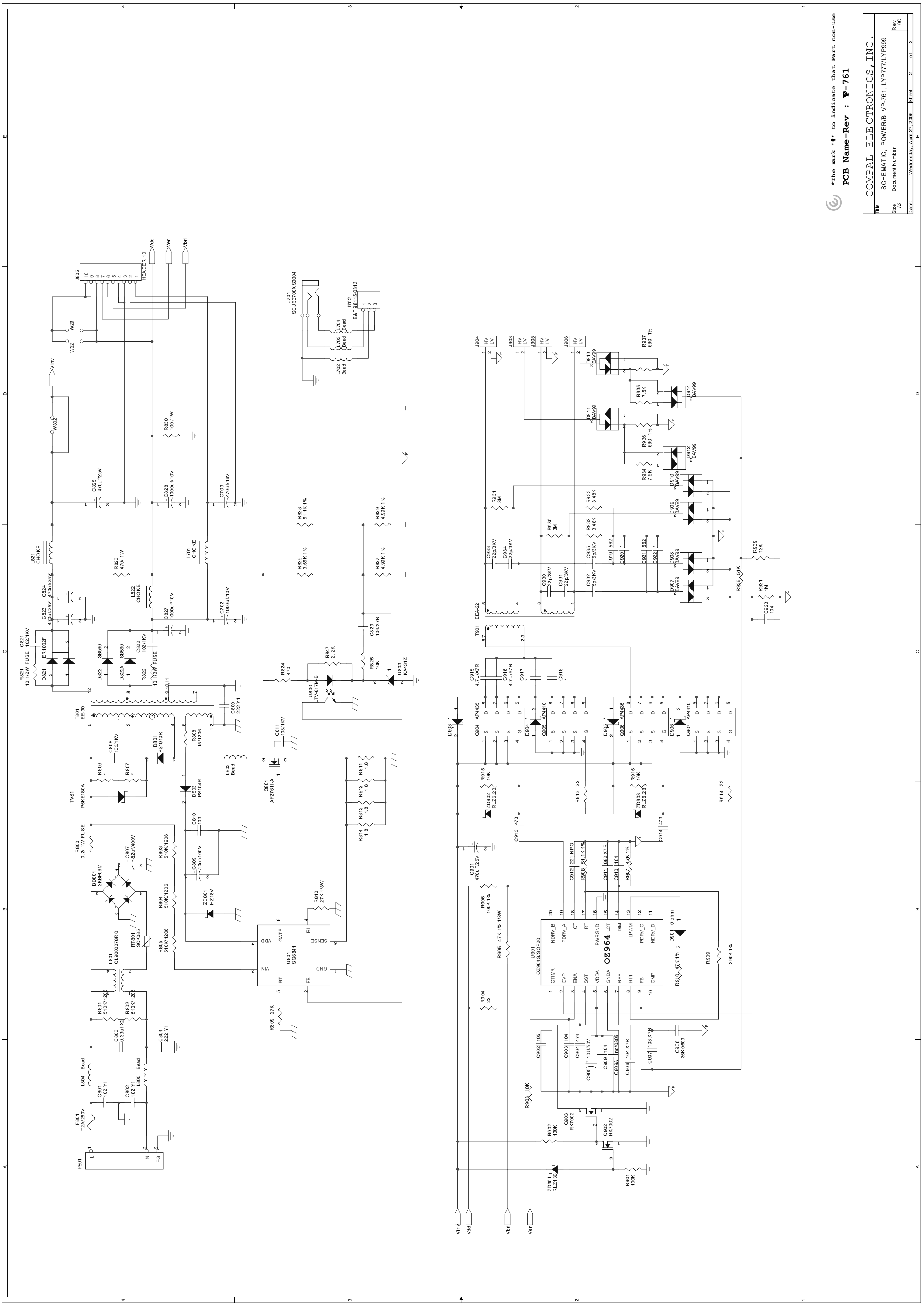

TSU56AJ
*All Res. and Cap. size is 0603.
*The mark "#" indicate that Part disuse.
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COMPAL ELECTRONICS, INC.
Title
Schematic, CTRL/ B VL922, LAA698
Size A3
Document Number
Rev 0A
Date: Friday, April 22, 2005
Sheet 5 of 8

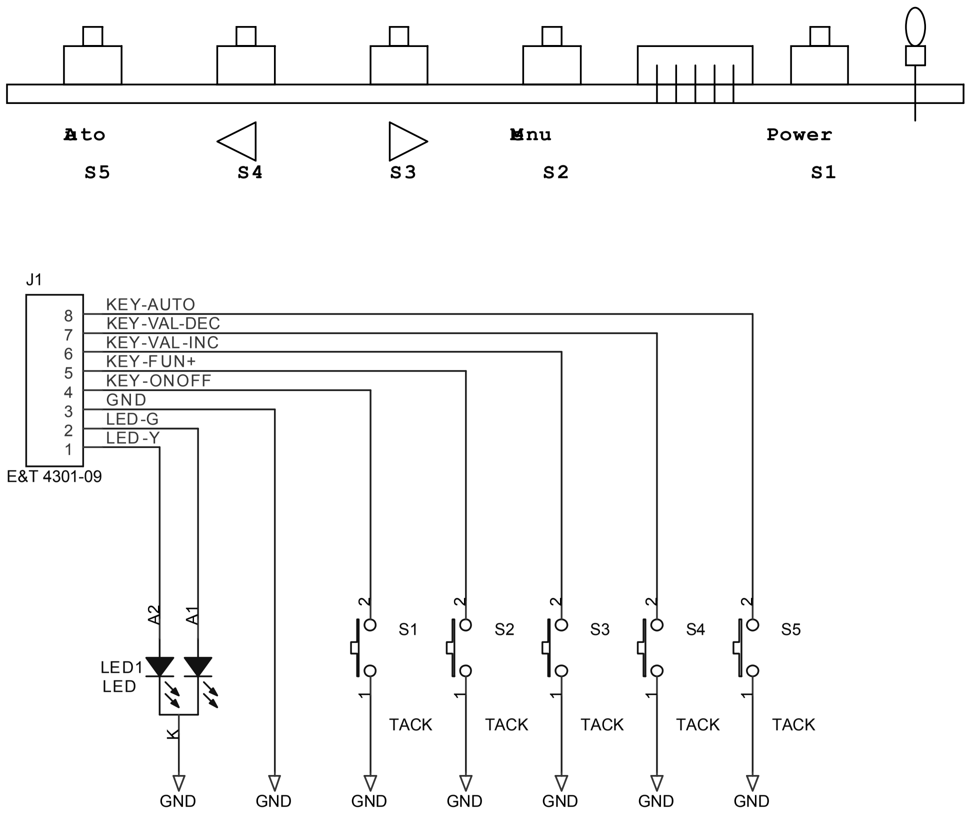

*All Res. and Cap. size is 0603.
*The mark "#" indicate that Part disuse.
COMPAL ELECTRONICS, INC.
Schematic, CTRL/ B VL922, LAA698
KEY PULL HIGH DESIGN
KEY BOARD-INTERFACE
I2C/RS232 Debug Connector
EEPROM
ACTIVE HIGH /RESET
Power LED Pull high design
MX10E8050AQC
Friday, April 22, 2005



LCD PANEL INTERFACE (LVDS)
LCD PANEL POWER CONTROL (Main)
PAN5V
CN5
P-TWO_AFN300-N2G1Z
PANEL_VOUT
SEL-LVDS
R69 10K#
R85 10K#
R86 10K#
R70 0#
R82 0#
R83 0#
JKMT_B201212K800TM
L8 L0805
R66 200 R1206D
C51 0.1uF
C52 100uF/16V
U7
APM4461KC_SO8_P-channel
DTC124EK SOT-23B
COLLECTOR
BASE
EMITTER
Vds -24V
Vgs = -2.5V/-4.5V/-10V
Id = -2A/-4A/-7A
(APM4461)
R65 10K
Q6 2SC2411K
C53 0.01uF
C50 1000uF/10V
R68 33K
C66 10uF 0805
R89 10K
Q8 2SC2411K
R88 0#
R90 10K
PANEL_VCTL
R88 for current PCB VL-922 rev.0
R89,R90,Q8, for nest version VL-922 rev.0A
*The mark "#" to indicate that Part disuse.
PCB Name-Rev :VL922-0A
COMPAL ELECTRONICS, INC."
Title
Schematic, CTRL/B VL922, LA4698
Size
Document Number
401ACQ
Rev
0A
Date: Friday, April 22, 2005
Sheet 7 of 8


PCB Name-Rev :VL922-0A
COMPAL ELECTRONICS, INC."
Title
Schematic, CTRL/B VL922, LAA698
Size
B
Document Number
401ACQ
Rev
0A
Date:
Friday, April 22, 2005
Sheet
8
of
8
3/19 Modify
VDD
3.3VDD
1.8VDD
PAN5V
VCC
U8
APL1084-3.3CE
TO252-3
U9
APL1117-18UC
SOT-223
APL1117
SOT-223
APL1085
-33CE
SOT-252
Vout
ADJ/GND
OUT
IN
L9
L10
L11
JKMT_B201212K800TM
For logic:+5V
BLKT_EN+
BRIGHT
BLT_ON
Q4
MMBT3904
Q7
DTC124EKA_NPN
CN6
E&T 4500-10
R120
R12
1206
0805
220uF/10V
100uF/16V
47uF/16V
0.1uF
0.01uF


*The mark "#" to indicate that Part non-use
PCB Name-Rev : VP-761
COMPAL ELECTRONICS, INC.
SCHEMATIC, POWER/B VP-761, LYP777/LYP999
OZ964



*The mark "#" to indicate that Part disuse.

PCB Name-Rev : VK922-0 Page_2

COMPAL ELECTRONICS, INC.		
Title: SCHEMATIC, KEY/B VK-922, LAA698		
Size: A	Document Number: 404AC8	Rev: 0A
Date: Friday, April 29, 2005	Sheet 3 of 3	